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Purchasing FRENCH FRY POTATOES

UNITED STATES DEPARTMENT
OF AGRICULTURE
FOOD AND NUTRITION SERVICE
FOOD DISTRIBUTION DIVISION

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FIRST EDITION

THIS IS A TECHNICAL ASSISTANCE MANUAL FOR USE BY FOOD SERVICE DIRECTORS OF PUBLICALLY FUNDED FEEDING PROGRAMS HANDLING USDA DONATED AND COMMERCIALY SUPPLIED FOODS. THE GUIDELINES PRESENTED IN THIS MANUAL MAY ALSO BE OF USE TO ESTABLISHMENTS IN THE PRIVATE SECTOR.

THE INFORMATION PRESENTED HEREIN IS INTENDED AS A COMPLEMENT TO, BUT NOT A SUBSTITUTE FOR REGULATIONS, POLICIES AND GUIDELINES DEVELOPED BY FNS AND OTHERS RELATING TO NUTRITIONAL REQUIREMENTS FOR MEAL PATTERNS AND SERVING SIZES AND FOOD QUALITY STANDARDS.

THE RESPONSIBILITY FOR THE CONTENTS OF THIS MANUAL IS THAT OF THE CONTRACTING AUTHORS AND DOES NOT NECESSARILY REFLECT THE VIEWS AND POLICIES OF THE USDA, NOR DOES MENTION OF TRADE NAMES, COMMERCIAL PRODUCTS OR ORGANIZATIONS IMPLY ENDORSEMENT BY THE U. S. GOVERNMENT.

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PREFACE

The information presented in this manual was initially developed by the Food Industry Services Group under contract with the State of Mississippi and revised for the United States Department of Agriculture, Food and Nutrition Service, Food Distribution Division. The information was developed in response to numerous requests from public institutions and congregate feeding programs of various types.

This manuscript is one of a series of manuals made available by the USDA - FNS as a part of a Technical Assistance Program to help food service supervisors throughout the United States. The various Technical Assistance Manual Series is identified as follows:

Volume I	Catalog of Specifications - 265 pages
Volume II	Contract Purchasing - Variable Cost - 310 pages
Volume III	Food Facts - 585 pages
Volume IV	Directory of Information Sources - 570 pages
Volume V	Storage and Care of Food Products - 225 pages
Volume VI	Purchasing French Fry Potatoes - 170 pages

Although the research funds for the compilation of these manuals were provided by the U.S. Department of Agriculture and the State of Mississippi, printing and handling cost are to be assumed by the end-users. Copies of the manuals may be obtained from the contractor, whose address is shown in the FOREWORD or it may be possible to obtain copies from your Regional FNS Offices.

These manuals are designed to represent the latest sources of information which we hope will strengthen food service management endeavors, everywhere.

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FOREWORD

This manual represents one of several manuals produced by the Food Industry Services Group for the Food Distribution Division of FNS. These publications are designed to provide technical assistance to food service supervisors for improving procurement and handling of food products.

Copies of the manuals may be obtained at modest charges from the contractor. The charges include the cost of printing handling and mailing at book rates, promotion and advertising. Revenue from the sale of the manuals may be used to revise and enlarge the scope of the manuscripts. If you wish to find out about charges, place orders, or ask questions concerning the manuals, please contact:

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Although this manual is directed toward institutional (and school) food service supervisors at state and local levels, it will also be useful to commercial distributors and packers, food service operators in the commercial sector, as well as administrators and others concerned with food distribution and utilization.

James A. Mixon, Chairman
Food Industry Services Group

Purchasing French Fry Potatoes
First Edition, 1986
First Printing, July, 1986

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SUMMARY

SUMMARY

This summary consists of highlights from the manual which can be used as guides in purchasing French fries. The keys to successful purchasing and patron acceptance are SELECT, SPEC, CHECK and PREP, based on the following criteria: (an example:)

Product.....	French fry potatoes Oven-Ready
Packer.....	Simplot
Brand.....	Quick n' Crispy (Bake-a-Fry)
Packer Code.....	35526
Style - Shape.....	Straight
- Thickness.....	Shoestring - 1/4" x 1/4"
Length.....	Long
Grade.....	A
Solids.....	50 Percent
Pack Size.....	6/4-lb.

SELECT

There are literally dozens of options available from the packing sector. Become familiar with these options and make a choice in accord with:

- The type of cooking equipment available:
 - * If you do not have deep fat fryers you will have to choose oven fries.
 - * If you must prepare a large volume of fries at one time, you may have to rely on oven fries.

- * Many fries processed for oven cooking are not suitable for deep fat cooking and visa versa. (There are one or two exceptions. See Section 6.)
- * Many schools and other congregate feeding establishments do not have deep fat fryers because of the high cost of (1) installing a vent system in accordance with the codes, and/or (2) casualty (fire) insurance (depending on how and where the fryers are installed).
- The style of product desired. Style refers to the shape (or method of cut) and thickness of the strips.
 - * Shapes are available as straight, crinkle, steak cuts, cuts with skin on, and formed products which may be fortified and flavored.
 - * Thickness refers to cuts of various dimensions, i.e., 1/4" x 1/4", 5/16" x 5/16", etc.
- The length of fry strips desired. Strips are available as extra long, long, medium (line flow) or shorts.
 - * Lengths are governed by USDA standards. Extra long or long shoestring and other thin cuts, yield more servings (based on volume) per bag than short cut or thick fries. See Figure 1.

- The percent solids desired in the potatoes.
 - * Generally, the higher the solids content (in relation to moisture) the higher the acceptability of the fries. However, this depends somewhat on the style (and size) of the cut.
 - * The thinner cuts, shoestrings for example, should have a high ratio of solids to moisture. Steak fries which are thicker, can tolerate a higher moisture content.
 - * Higher solids means higher yield, thus less shrink and a more prolonged use of the cooking oil. The higher the the greater the dilution of water with hot oil.
 - * Traditionally a large percent of the potatoes produced in the Northwest have high solids, due to enviromental conditions and the control of watering by irrigation. However other areas of the country also grow high solid potatoes.
 - * Generally, higher solid potatoes are more expensive. Thus, low budget operations might want to use thicker potato strips and purchase lower solid potatoes.

- * Specifications should stipulate the percent solids desired. Although solids cannot be verified on delivery, the specifications serve as a guide to the supplier. Samples of the fry, however, can be sent to a lab two or three times a year for verification.
- * Most of the quality problems are due to low solids content.
- Product grades are as follows:
 - * French fries are usually purchased "off the street" by packer grades or packer brand labels which show on the cartons. Some products such as formed items may be ungraded.
 - * Most French fries used by the food service trades are Grade A, except in the case of ungraded fries, such as formed products. However, Grade B fries may be used where severe cost constraints exist.

For least cost, choose from options offered by local distributors, unless you are a high volume user. If a potato is not used widely by other accounts in your area, costs might be high due to increased per unit transportation cost and higher price brackets.

Carefully select menu items by patron testing. Continue to test products which are new to you or new to the market.

SPEC AND CHECK

- Write a precise spec as shown in the first page of this summary.
 - * Be sure and specify the manufacturer's item code (ID) number.
 - * If the point of origin is declared it will be shown on the master carton, often in terms of the State logo.
 - * Except for do not specify requirements which cannot be checked.
 - * Do not write unreasonable specifications.
 - * Before issuing specs, check with local distributors to see if the specs are realistic and the products are available locally.
 - * Do not ask for "or equal or better". You must be more precise.

Check wholesale cartons upon delivery on all aspects of the spec but particularly with respect to packer codes.

- * Request your supplier to include a complete product ID on the invoice (delivery ticket) for ease in checking against the cartons.
- * Open and check one or more packages for damages due to the breakage of strips.

- * Discuss consistent discrepancies with your distributor's marketing representative.

PREP

- Proper cooking and serving is very important, because if a breakdown occurs at this point all previous efforts to select, spec and check can be negated.
- * If oven cooking is used, cook at the recommended temperature. Properly vent ovens if convection units are used and do not overload pans.
- * If a deep fryer is used, do not overload basket, keep the temperatures proper and accurate (check daily); filter, add or change oil regularly and otherwise precisely follow the proper cooking instructions, including proper drainage of the strip after removing from the fryer.
- * Serve fries in an appealing manner and make sure that they are kept warm. Do not hold the fries for more than 15 minutes, otherwise they will become soggy and limp.
- * Serving sizes should be commensurate with menu requirements, patron acceptance and your food budget. Measure servings as precisely as practical.
- * Do not thaw fries before cooking; cook from frozen state.

I - OVERVIEW

I. OVERVIEW

The French fried potato is an "institution" unique to America. It might be rationalized that no other happening can equal the impact that the French fry has had on American food service. When ordered and consumed, a serving of French fries projects a simple and precise product. However, each serving represents the end-product of a long and tedious trail which is fraught with complexities and variables borne of a necessity to be precise.

As you will learn from this manual, good French fries just don't happen. They result from tedious and careful handling from the tilling of the soil on a farm in Idaho (for example) to the serving of the product in a dining facility in Charleston, South Carolina.

Serving successful French fries is predicated on many factors, all of which must be carefully controlled:

- By Growers and Processors:
 - * The selection of the right tubers for propagation,
 - * Selection & cultivation of the right soil for growing,
 - * Proper fertilizing and insect and disease control procedures,
 - * Proper land irrigation where applicable,
 - * Proper harvesting and handling,
 - * Proper treatment and storage of fresh tubers,

- * Proper processing (cutting, blanching, frying, sizing, inspection and grading),
- * Proper storage and shipping of finished products,
- * Selecting and purchasing the right product to meet the needs of the food service operation.
- * The maintenance of well designed research and development programs for improving all facets of potato growing, processing, handling and preparation.
- By Food Service Personnel:
 - * Proper storage and care of product at food prep kitchens before cooking,
 - * Proper preparation and presentation to patrons in food service establishments.

Another essential ingredient in successful potato management from the viewpoint of the food service operator is the availability of information which will provide managers with the assistance they need to make purchasing and serving decisions commensurate with their objectives. This manual on french fries addresses this need.

FUNDAMENTAL PURCHASING DECISIONS

The first priority in successful potato management is for the food service operator to select the proper French fry from the numerous options available. Fundamentally, this decision will depend on the cooking equipment available and the time frame between cooking and serving. Beyond this fundamental the buying decision will be fashioned by:

- The structure of the establishment's menu,
- Types of patronage served,
- Food cost relative to the pricing structure of the menu,
- Options available from local distributors,
- Information available.

If equipment is not available for deep frying potatoes then the alternative is to oven fry. On the other hand if a large number of servings have to be generated in a short period of time, oven fries might be selected over deep fat fries.*

Menu structure plays an important part in product selection. Certain dishes demand certain styles of potatoes. Shoestrings seem to go with hamburgers while larger sizes, steak fries, for example, may be a good choice to serve with plate lunches such as salisbury steaks or fish platters.

The type of patrons served in an establishment must be considered when choosing a French fry. For example a different style of potato might be chosen for serving in high school than a grade school. One style might be acceptable in a cafeteria and another style in a formal dining room.

* The term "French fry (or Fries)" is used in this text as a general term which refers to potatoes which are cooked for serving either by immersion in deep fat or by cooking in an oven. Strictly speaking, however, the term "French fry" means to cook in deep fat by immersion.

If food cost is an over-riding consideration then "quality" might be sacrificed for price. Accordingly, an operator might wisely choose a good "quality" potato that can be served at an economical food cost, with adequate patron acceptance.

Check yield from time to time to judge performance. Average yield is 75 to 80 percent, i.e., one pound of frozen potatoes will produce approximately 12 oz. of finished product.

The selection of potatoes in accordance with regional patronage preference, might also be an important consideration. Preference for French fries in Prescott, Arizona, for example, might be quite different from preferences in Bristol, Virginia.

Occasionally an operator's choice might be fashioned by the items available from local distributors. Although there may be 100 variations available nationwide, a food distributor may stock only 10 variations to meet the needs of the customers in his area. It wouldn't make sense, really, for the distributor to stock excessive variations because product deterioration might occur and costs escalate due to high investments in inventory.

Often product selection is determined by the information available to the food service operator. To this end, it is important that a food service director broaden the scope of his or her knowledge of product availability, and keep this knowledge updated.

SPECIFICATIONS

Once a product has been selected to fill the needs of a food service establishment, it then becomes necessary to identify this product in terms of a product SPEC and monitor deliveries so as to assure that the proper product is received time after time. A SPEC may be expressed as follows: (For example)

Buyers Item No.	B000
Product	Potatoes, French Fry Oven-ready
Packer	Simplot
Brand	Quick n' Crispy (Bake-a-Fry)
Packer Code	35526
Style - Shape	Straight
- Thickness	Shoestring - 1/4"x1/4"
Lengths	Long
Grade	A
Solids	50 Percent
Pack Size	6/4-lb.
Net/Gross	24/26 lb.

In purchasing French fries it is not recommended that the buyer permit "an equal." However, a buyer may decide to bid two similar items, with the stipulation that either one or the other will be accepted, depending on price.

COPING WITH VARIABLES

It is important for the buyer to understand that the "quality" level of potatoes may vary from time to time due to differences in raw potato lots, times of the year, or processing and handling. Although origin may have a significant effect on the solids content of potatoes, other factors also play significant roles. Poor quality French fries may be produced in all regions, therefore, origin should not be "the governing factor".

SCOPE OF THIS MANUAL

In recent years, French fries have been served almost daily, or at least several times a week in many school cafeterias throughout the land. To this end "fries" may be the most important complementary school lunch item, from an economic standpoint, served in public and private schools, thus representing a sizable portion of the school food service dollar. Moreover, choosing, preparing and serving the "right" French fry enhances student participation.

This manual is intended for use by food service supervisors as a reference for selecting, purchasing, preparing and serving French fried potatoes. This is a timely subject because of the rapid growth over the past decade in the popularity of French fries, particularly with the younger generation. This popularity has been accompanied by a surge of "new" products being offered by processors. Although many of these products are true variations, a processor may give a product a different name simply to differentiate it from "the crowd." This practice is often confusing to buyers.

This manual is dedicated principally to identifying the various French fry products available to the food service trades and describing the factors which influence product qualities. Furthermore, this manual addresses the position of regional or local distributors in the supply picture and describes why distributors may stock a limited variation of French fries and how this may limit the choices of food service supervisors. This text also treats geographical production as related to product quality and freight costs, which ultimately influence the buying decisions of food service supervisors.

This manual also addresses the options available to the food service supervisor, particularly from the standpoint of product qualities and unit sizes and styles. It addresses the necessity for exploring the range of products compatible with kitchen equipment, food budgets, and patron acceptance.

This manual describes the actions which might be taken by food service supervisors to assure constant deliveries of products in compliance with purchasing specifications, particularly as related to product qualities, sizes and styles. It also contains a list of brands and item codes of product generally available to feeding establishments, and describes what steps might be taken in the kitchen to prepare French fries which offer maximum patron acceptance.

In addition, this manual addresses the subject of USDA grades and size standards and discusses the deviations which may occur in packer or distributor brands. The scope of the Contents is as follows:

- Choices Available
- Quality Considerations
- Length of French Fries
- Styles of French Fries
- Local Availability
- Price Versus Packing Area
- Product Specifications
- Preparing and Serving
- List of Packers, Products and Codes
- Growing and Processing Methods

II - PRODUCTION AND MARKETING

II. PRODUCTION AND MARKETING

VARIETIES OF POTATOES

Different varieties of potatoes are grown for different end-use purposes and some varieties are suitable for many purposes. Many growers plant potatoes with a single market in mind; e.g.

- Fresh for baking,
- Fresh for all-purpose use, i.e., baking, boiling, making mashed potatoes or potato salad, preparing hash browns or cutting into French fries,
- Processing into French fries,
- Processing into potato chips,
- Processing into dehydrated potatoes (granular or flakes) for preparing mashed potatoes,
- Canned potatoes - whole, diced or sliced.

While no single variety of potato is best for all purposes, some potatoes may be used for more than one end-use, but compromises must be made. Since the Spaniards found the potato in South America in the 1600s, four centuries of research have yielded five versatile, high quality types of potatoes: russets, round whites, round reds, long whites and yellows, also called "Yukon Golds". Many chefs refer to potatoes in two contrasting terms; "mealy" and "waxy."

The mealy potato, such as the Russet Burbank is preferred for baking, French frying and dehydrating. If boiled, these potatoes have a tendency to break up. Waxy potatoes, including white varieties, such as the White Rose or the Katahdin and almost any variety of red potatoes are preferred by many cooks as a boiling potato to use in those dishes that must hold their shape, and for pan or grill frying. The yellow varieties are not widely used in the U.S.

The following table is typical of uses of various varieties of potatoes, but it must be emphasized that all authorities do not agree with these end-uses. Contradictions between the best of chefs and processors occur over differences of varieties. State experiment stations and USDA laboratories are continuously working with growers and processors to produce other varieties that meet the needs of the industry. Therefore, the following table should be used only as a general guide and considered as a supplement to the experience of food specialists.

<u>ROUND WHITE</u>	<u>Maine N.East</u>	<u>East</u>	<u>South-east</u>	<u>Midwest</u>	<u>North-east</u>
Kennebec	1,2				
Katahdin	2,3,4,5				
Superior		4,5			
Norchip		1,2			
Sebago			4,5		
Ontario				4,5	
Chippewa					4,5
Crystal				2,3,4,5	
<u>RUSSET</u>	<u>NW, WI CO, NY*</u>	<u>WA, OR RRV**</u>	<u>CO, CA***</u>	<u>East</u>	<u>North-east</u>
R. Burbank	2,3				
Norgold		2,3			
Centennial			2,3		
Atlantic			2,3		
Bel Rus				2,3	
<u>ROUND RED</u>	<u>North Central</u>	<u>South-east</u>	<u>Colorado</u>		
Norland	4,5				
Red Pontiac	4,5				
Red La Soda		4,5			
La Rouge		4,5			
Red McClure			4,5		
<u>LONG WHITE</u>	<u>CA, AZ</u>				
White Rose	4,5				

1 - Chips, 2 - French Fries, 3 - Baked, 4 - Boiled, 5 - Salad

* - Northwest, Wisconsin, Colorado, New York

** - Washington, Oregon, Red River Valley

*** - Colorado, California

Courtesy of The Potato Board

Potatoes grown for the French fry market must have high solids and low sugar content. Appearance, taste and texture of the finished product is dependent upon these factors. The solids (or starch) content is an indicator of how much water must be evaporated by the processor to provide an acceptable quality product. A high solids potato provides the mealy texture required for top quality products. Solids content is determined by specific gravity in raw product, and by the Convection Oven Method in the finished product.* The Convection oven method involves weighing the product and drying it in an oven at 103 degrees for 16 hours, then repeating the process for two-hour periods until the decrease is not more than 1/2 milligram. The moisture content is then calculated.

Potatoes with a sugar content in excess of two or three percent (based on dry weight) may be practically worthless for French fries. When fried, the heat causes these sugars to react with the amino acids (the building blocks of protein) and develop black or brown areas, spots or streaks or may just produce a dark fry. Caramelizing and burning of the sugar may also produce a burnt or sweet taste.

* This method is described in the "Official Methods of Analysis of the Association of Official Chemists, 14th Ed., 1984. A list of laboratories that can run this test is shown in Appendix B.

MARKETING FORMAT

The marketing of French fries by processors begins long before potatoes are planted. Processors rely heavily on booking "orders" so as to predetermine the acreage to place under contract with growers. See Appendix A. With this information in hand, the marketing department makes forecasts of sales for different styles and sizes of product. The production and marketing format develops as follows:

- A processor may pack French fries under a user label. Often this may be products of certain styles and sizes packed for national food chain accounts, in strict accord with predetermined specifications. A large amount of the highest quality potatoes go to this segment of the market.
- A processor is likely to pack a sizable percentage of output under his "packer's label." These products may consist of several different grades, styles and sizes, packed under a variety of labels for different segments of the market.
- A processor may also produce French fries under labels controlled by distributor buying groups.* The grades, styles and sizes of these fries will perhaps conform closely to the same specifications as produced under the packer's label, or as otherwise set forth by the customer.
- A processor may pack in retail size packages for retail food chains, under the customer's labels. Standards for these products may be set either by the processor (packer) or as a joint effort.

* Nifda, Frosty Acres, Code, Nugget, North American, for example.

Most large processors (packers) have a national sales staff or rely on brokers for sales representation. Even if brokers are used on a national basis, contract accounts are usually handled by the home office sales staff.

LOCAL DISTRIBUTORS

Except for a few national food service chains which buy direct from packers under user labels, most French fries are sold and distributed locally by food service distributors (wholesalers who warehouse and deliver food products). End-users, therefore, rely heavily on local distributors for product information relating to French fries. For this reason, food service supervisors often have limited knowledge concerning the broader spectrum of French fries.

The line of French fries offered by local distributors may be determined by one or more considerations, as follows:

- Basically, a distributor is motivated to stock a limited number of variations or labels of French fries so as to minimize investments in inventories, maximize space utilization and reduce risks of price decreases or product deterioration.
- A distributor will likely promote to his customers, a limited line of the most popular shapes, styles and sizes.
- A distributor is most likely to promote and emphasize his buying group label to avoid conflict between prices of packers' brands, which may be handled by competing distributors.

- A distributor, however, will stock and make available packer brands, as may be demanded by his better customers. Customers may be won over to packer brands by packers' sales representatives or brokers.

Since there is a wide range of French fried potatoes available from various packers, it is clearly evident that it is the responsibility of an end-user to investigate the options available and test and select those items most suitable to the needs as related to patron acceptance and food costs.

In addition to obtaining assistance from local distributors, food supervisors might also seek help from other sources, as follows:

- Review trade journals and make inquiries concerning products of interest,
- Solicit assistance from manufacturers' sales representatives and brokers,
- Attend exhibits at trade shows and conventions,
- Seek advice and exchange ideas with other food service supervisors.

CONSTRAINTS

Once a product preference has been established, it may not be economically sound to order a particular French fry if usage of the particular product is limited in your area and if your usage is relatively small. Unless a distributor can order a full trailerload (approximately 1375 cases) from a packer, prices might escalate due to freight costs or low quantity brackets. It is for this reason that small volume users often lean toward selecting suitable products from the items commonly stocked by local distributors for other accounts in the area.

If a food service supervisor prevails upon a distributor to stock an item not used by others in the area, then the supervisor has some obligation not to abandon use of the product without due notice to the supplier, so that his inventory can be depleted. For this and other equally important reasons, it is the responsibility of a food service supervisor to thoroughly patron-test a product prior to ordering it on a regular basis.

To this end, food service supervisors must be mindful that the same French fry may vary in quality from time to time due to variations in raw product and plant frying procedures. Lengths may vary due to breakage incurred in handling. There may be a high degree of quality variation of French fries between packers and even brand labels of the same packer in the short term. However, there is a higher degree of consistency in quality of the same brand label over a period of time. Most large packers have quality specifications for each brand label and if a particular lot does not meet the specs for one brand label, it will meet the specs for another. More frequently, the quality might also vary in accordance with frying procedures used at the point of consumption.

III PRODUCT OPTIONS

III. PRODUCT OPTIONS

A food service supervisor must exercise several options when selecting French fries. He or she can select from different:

- Lengths
- Styles (shapes and thicknesses)
- Percent solids
- Grades
- Types of products

The options selected often depend on the purpose for which the product is intended and food cost as budgeted for menu prices.

LENGTHS

Since whole potatoes come from the growing fields in different sizes and shapes, French fry strips also come in different sizes and shapes. A single large tuber (potato) when cut may yield strips ranging in length from extra long to short. Extra long symmetrical tubers will yield a high percentage of extra long strips and a lower percentage of shorter pieces and wedges. Once tubers are cut, the odd sizes and shapes may be separated and redirected for producing formed potatoes.

Lengths in French fried potatoes are closely related to "quality" as perceived by the buyer. Although length is not related to Grade, the USDA does provide length standards for four lengths of strips: extra long, long, medium and short. A large percentage of the extra long fries produced in the U.S. are marketed to fast food chains. Extra long is considered a "premium" pack for use in fast food chains and

in certain white tablecloth dining rooms where prestige is important. "Long" is the next most prestigious length. Medium strips are often referred to in the trades as "line flow" which is the whole potato cut into strips. Some packers guarantee a minimum of 8 to 15 percent over 3 inches in their line flow strips. Thus, at times, these strips may be equal to long strips. Medium lengths are popular with the cost-conscious market. Short length fries are sold primarily to the retail trades.

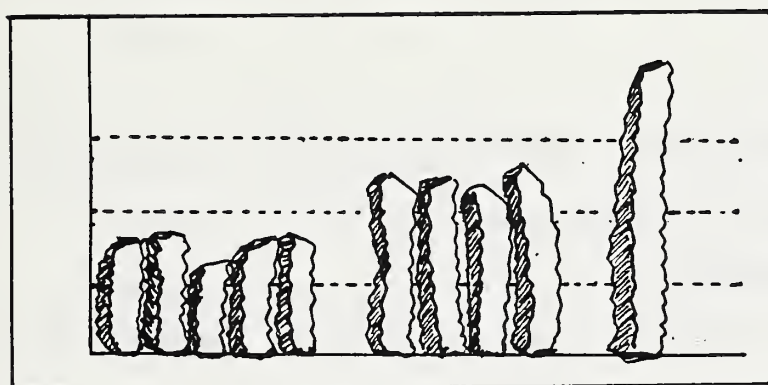
The most important result of USDA length standards is that they have brought consistency to the trades so that a food service operator knows what to expect when ordering. USDA criteria for length of strips are as follows:

Length	Extra Long (%)	Long (%)	Medium (%)	Short (%) [*]
Min. no. of strips over 3"	30	15	--	--
Max. no. of strips under 2"	20	30	50	No max. limit
Max. slivers, shorts & irregulars	15	15	15	15

Many packers have refined their length standards so that they exceed the above minimums by 3 to 5 percent. See Figure 1.

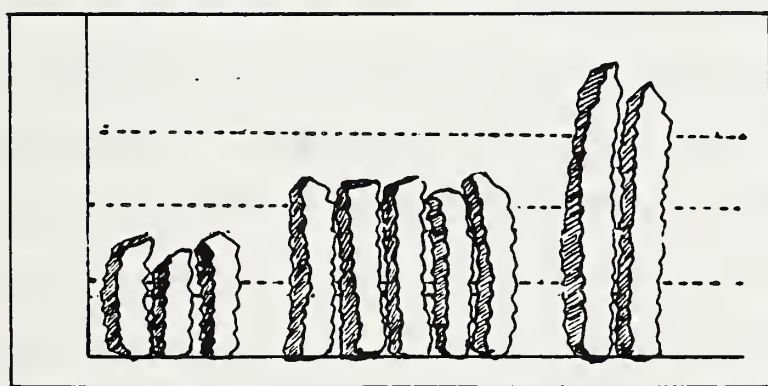
* Some food service operators have the mistaken belief that shorts cannot be U.S. Grade A. They can. The confusion probably arises in the manner in which the regulations are written. Part 52.2395 (a) describes Grade A as "the quality of frozen French fried potatoes, except "strip" style, "short" length, that--" and goes on to specify the factors of quality. Part (b) states "U.S. Grade A (or U.S. Fancy) Short" is the quality of frozen French fried potatoes of the "strip" style, "short" length and describes exactly the same factors of quality that are listed in part (a).

Figure 1 - Example of Potato Lengths According to USDA Length Standards



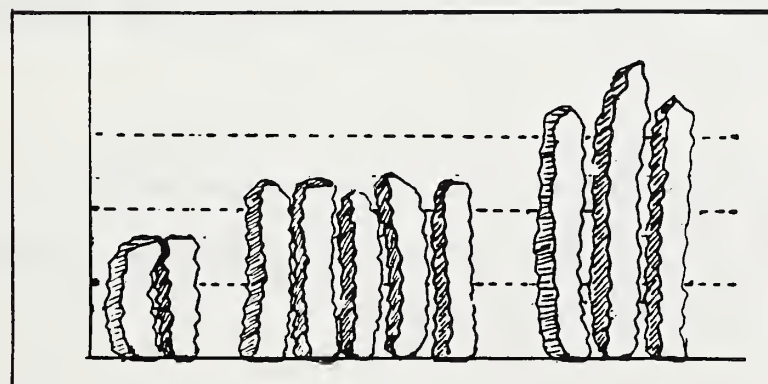
MEDIUM OR LINE FLOW

Maximum 50% under 2".



LONG

Maximum 30% under 2" Minimum 70% over 2" Minimum 15% over 3".



EXTRA LONG

Minimum 80% over 2". Minimum 30% over 3".

Scale: $\frac{3}{8}$ inch = 1 inch

A food service operator may wish to check the length of French fried potatoes at time of delivery. To do this, measure the strips and separate into the following categories:

1. Shorter than 2 inches. (Do not count those less than 1/2 inch),
2. Between 2 and 3 inches,
3. 3 inches and longer,
4. Calculate percentages of each and determine the length from the chart above.

Although a lot of French fries may fall within the USDA length standards when shipped they may be out-of-standard upon delivery due to breakages incurred in handling. Research has shown, for example, that if a box of extra long shoestring French fries is dropped three feet, it will result in a 35 percent breakage.

Length vs. Yield: French fries are traditionally served by volume rather than weight. Thus, the length (or distribution of length) presented in a serving container has a significant impact on the number of servings obtained from a case of French fries, as follows:

- The use of all short strips will require more weight in a serving container to make it look more "visibly full," than a proportionate amount of long and short strips combined.

- By the same token, a serving of all long strips will hang over the edge of a container, making it look awkward and at the same time add more weight.
- However, a proportionate number of longs used with shorts will fill a container or plate and look better than a lot of shorts or longs served individually and a blend of this type will weigh less per given volume than all shorts or longs.

STYLES

Styles relate to the shape and thickness of potato cuts. Although there are four common shapes of French fries, i.e. straight (called regular by some packers), crinkle, steak fries and formed potatoes, there are many variations available from packers. See Figure 2. Unlike French fry length, potato styles are not particularly related to tuber selection. For example, a tuber which is well suited to 3/8 inch straight cut might be equally suitable for 3/8 inch crinkle cut.

Some of the more common shapes are as follows:

shoestrings	crinkle cuts
thin straights	wedges of various sizes
thin crinkles	steak (ranch) fries [*]
straight fries	formed products

^{*}Steak and ranch fries are either similar or dissimilar, depending on the packer.

Figure 2 - An Example of Variations in "French Fries." Different Names May be Assigned by Different Packers.



Common thicknesses available are:

$3/16'' \times 3/16''^*$	$5/16'' \times 5/16''$
$1/4'' \times 1/4''$	$3/8'' \times 5/16''$
$1/4'' \times 5/8''$	$3/8'' \times 3/8''$
$1/4'' \times 1/2''$	$1/2'' \times 1/2''$

Steak fries may be $3/8'' \times 3/4''$ or even larger.

Shoestrings were popularized by huge sales in fast food operations and go well with hamburgers and sandwiches. Traditionally $1/4''$ in thickness, they are characterized by their crisp exteriors. As French fry thicknesses increase, so does the heat retention of the strips as well as the mealy texture of the product. Steak fries are an extremely wide straight cut French fry, which provides maximum internal taste and texture, while maintaining a crisp exterior. Steak fries have excellent heat retention.

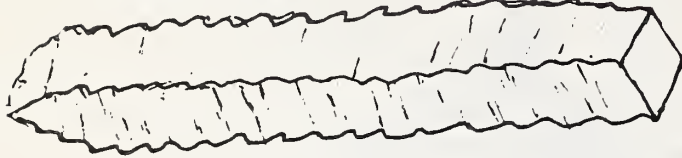
A recent innovation in French fry styles is Curley Q fries (by Tater Boy). These are $1/4'' \times 1/4''$ or $1/4'' \times 1/3''$ strips that seem to be adequately described by the product name. Another recent addition to the styles of French fry is called criss-cut fries (Lamb-Weston) which is a unique criss-cross cut which is full of holes.

Slimmer cut and crinkle styles have more surface area per pound of potato, thus use more shortening in frying. This also gives more fried surface flavor. The thinner the cuts, the less potato necessary to make what appears to be a normal serving. Thinner cuts break much easier than thicker cuts and crinkle cut and shoestrings break the easiest of all when handling. Steak cuts are the most difficult to break when handling.

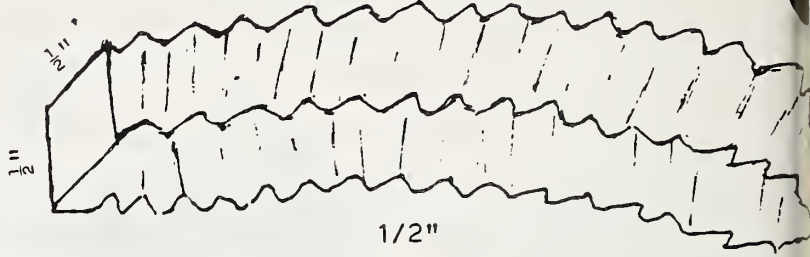
*Some strips are square in cross section, $3/8''$ square, while others are rectangular, i.e., $3/8''$ in one dimension and $5/16''$ in the other. See the following illustration.

SKETCHES OF SIZES (THICKNESSES) OF FRENCH FRIES COMMONLY AVAILABLE FROM PACKERS

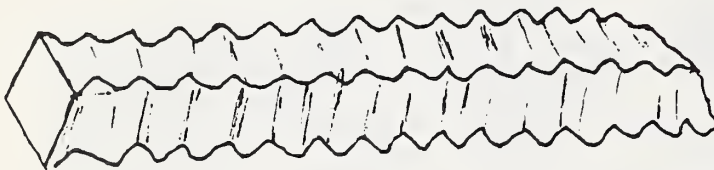
Crinkle Cuts



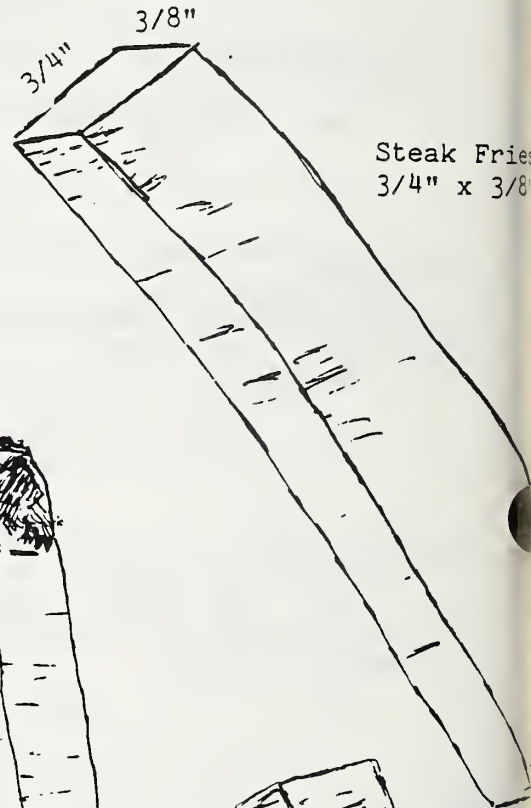
5/16"



1/2"



3/8"



Steak Fries
3/4" x 3/8"



1/4"



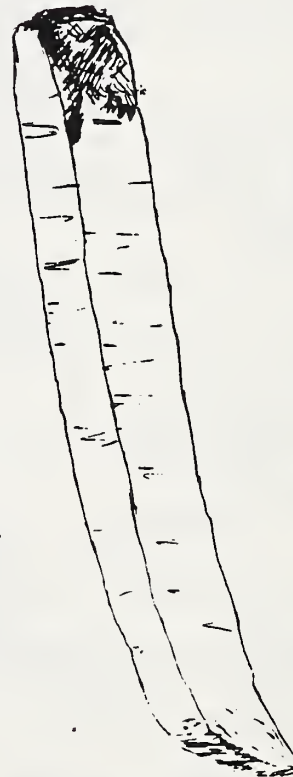
5/16"



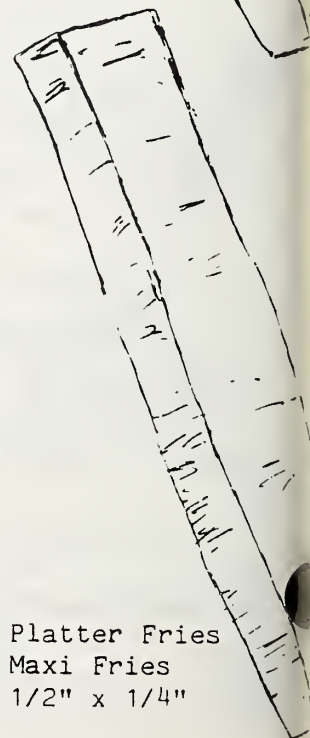
3/8"



1/2"



Natural Cuts
(skin on)
1/4" x 3/8"



Platter Fries
Maxi Fries
1/2" x 1/4"



Natural Wedges
3-1/2" x 1/2"

Shoestring

Straight Cuts

Crinkle cuts are better for oven preparation than straight cuts. The extra surface area of the crinkles produces a crisper product, presents a slightly darker edge color and holds up longer than straight cuts during frying and serving. Although 1/2 inch crinkle cuts were the "in thing" a few years ago, they seem to have become less popular than thin straight cuts.

Size vs. Yield: The weight of French fries varies directly with the size (thickness) of the cut. For example, fries 1/2" x 1/2" in thickness weigh more per strip than 1/4" x 1/4" strips. Thinner strips produce more servings per case when served on a volume basis.

SOLIDS

The percent of solids (starch) to moisture in a French fry may be the one factor which most influences the quality or acceptability of the product. The higher the solids the higher the level of acceptance in most styles. The amount of solids in potatoes is primarily dependent upon the variety, growing conditions and the amount of water the tubers received during the growing season. Because the Northwest depends upon irrigation, the moisture or solids content of tubers can be more precisely controlled. In the Midwest and East, growers depend largely on rainfall for ground moisture, thus the percentage of moisture (and solids) becomes more variable.

Although not a factor of U.S. Grades, the solids content of French fried potatoes is closely related to value. High levels of solids provide a desired mealy texture. French fries containing low solids (high moisture) must be fried longer at a lower temperature or they will be soggy or limp. Moisture comes out of the product when it is being fried, which results in a faster breakdown of the cooking oil.

The solids content, as determined by either the specific gravity or convection oven method, also indicates how much oil will be absorbed. The solids content of potatoes may vary from the raw to the finished product as follows:

	% Solids	% Moisture	% Oil [*]
Raw Product	20	80	--
Parfried Product ^{**}	26	67	7
Cooked Product	43	43	14

* Oil content is normally included in the percent solids.

** At the processing plant.

The percent solids required for top quality frozen French fried potatoes may vary according to the style, size and length of the cuts. For optimum texture thinner cuts like shoestrings require slightly more solids than 3/8" cuts, and 3/8" cuts require slightly more solids than large cuts. The solids content of top quality and good quality French fries is as follows:

Top Quality Product		Good Quality Product	
	<u>Solids</u>		<u>Solids</u>
Shoestrings 1/4"	34 - 38%		30 - 34%
Thins 5/16"	32 - 36%		28 - 32%
Crinkle 3/8 - 1/2"	30 - 34%		26 - 31%
Straight 3/8 - 1/2"	30 - 34%		26 - 30%
Steak (thick)	29 - 33%		26 - 28%

Buyers should specify the solids content they prefer just as they specify length and style. Although solids content cannot be verified on delivery, it serves as a guide to the supplier. Samples of the fries can be sent to a lab two or three times a year for verification. When the fries are not cooking properly and the cooking time and thermostat have been verified, the chances are that the solids are not up to specs. They should be checked by a lab and if more than two percent below the spec, the distributor or packer should be contacted for restitution. If the solids are not specified in the specs, the food service operator has no "comeback" when things go wrong.

Solids vs. Yield: High moisture potatoes, particularly the thinner cuts may suffer shrinkage during cooking, thus when served on a volume basis, potatoes with higher solids produce a higher yield (greater number of servings per given weight of product).

TEST PROCEDURE FOR YIELD*

Considering the amount of product used annually the yield received from French fries can make a significant difference in food costs incurred by an operator. Thus, it may be helpful to food service supervisors to conduct yield tests for the purpose of:

- Comparing products from different processors
- Comparing the yields of different cut sizes and styles
- Evaluating consistency from one order to the next
- Determining profitability
- Comparing product to specifications

* Courtesy of Nifda, Inc. Atlanta, GA

To run a yield test, the following procedures should be performed:

1. Accurately weigh and record the weights of each of the six bags in the case, making allowances for the weight of the empty bags.
2. Carefully mix the contents of one of the bags to distribute the lengths evenly throughout. Accurately weigh a one or two pound portion of this mixed product to use for length percentage determination. Measure the length of each of the strips, separating them into one of the following three groups:
 - Shorter than 2 inches (not counting the pieces shorter than 1/2 inch)
 - Between 2 and 3 inches
 - 3 inches or longer
3. Calculate the percent by count of each length category by totaling the number in each length group, adding these totals to determine the sample total, then dividing the number of strips in each group by the sample total, then multiplying each answer by 100.
4. Next fry the entire contents of the bag, including the portion used for length determination. Be careful not to overload the fryer. The best results will be obtained when the packer's guidelines for preparation are followed.

5. After frying, portion the fries into serving bags or cartons using a french fry scoop.
6. Count the number of servings obtained. If a partial serving remains, its contents should be estimated, i.e., 1/4 serving, 1/3 serving, 1/2 serving, etc. A quick estimation of the number of servings per case can be done by multiplying the number of servings from the single bag by the number of bags per case. A more accurate method for determining servings per case, however, is to use the following formula:
$$\frac{\text{Number of servings per bag}}{\text{Net weight of the bag}} \times \text{Net weight of case}$$
7. The cost per serving can be calculated by dividing the cost per case by the number of servings per case.

If all variables are within specification, the product which gives the lowest food cost would be the best buy.

GRADE CHARACTERISTICS

The United States Standards for Grades of Frozen French Fried Potatoes was published by the USDA in 1967. These Standards (found in CFR7 Part 52.2391) establish criteria for grades. These criteria evaluate five factors:

- Flavor and odor (not scored)
- Color (30 points maximum)
- Uniformity of size and symmetry (20 points maximum)
- Defects (20 points maximum)
- Texture (30 points maximum)

It should be noted that two factors: strip length and percent solids, which are closely tied to quality (patron acceptance) and value are not included in the grade criteria. Although definitions and descriptions are given for determining grades, much of the grading process is subjective, and leaves considerable room for variations in judgement, both by USDA and packer graders. Of the five foregoing grade characteristics, four are assigned numerical values and one is purely subjective. To attain Grade A, potatoes must have a total score of 90 or above (up to 100) and have a good flavor and odor. See Appendix C.

While most French fried potatoes packed for the food service trades are Grade A, most of the potatoes packed for the retail market are Grade B or Grade A Short. Grade A potatoes are labeled Grade A. If Grade B, the grade is not usually shown.

Flavor and Odor-(Not Scored): Good flavor and odor are a prerequisite of Grade A potatoes. The flavor of French fried potatoes is affected by the blanching process used at the packing plants; the type and condition of the fat or oil used and to a certain extent, the variety of the potatoes used. Such growing factors as the type of soil, climatic conditions, and the insect control measures applied during the growing season also influence flavor and odor.

Grade B potatoes must have "reasonably good flavor." Sweetness, bitterness, rancidity of oil and pronounced scorched or caramelized flavor and odors are the usual reasons for lowering the evaluation of flavor from "good" to only "reasonably good." Any definitely objectionable flavors or odors would be cause for lowering the grade of the product to substandard. You can test for flavor and odor by cooking French fries and classifying flavor and odor as either "good" or "reasonably good."

Color (Max.30): In grading for color, the product's shade and the consistency of color throughout a batch are considered. There is less color variation in higher grades.

The color factor is scored up to a maximum of 30 points. Grade A may be give 27 to 30 points for "good color." Grade B may score from 24 to 26 points for "reasonably good color." This is a limiting rule, which means that fries that receive a grade of 24 to 26 may not be graded above Grade B, regardless of the total score.

Color is evaluated before complete defrosting but after any exterior frost has evaporated. The score may be adjusted after cooking to reflect color variations. The color numbers refer to a color which is visually similar to the designated colors in the USDA Color Standards for Frozen French Fried Potatoes. These standards are available in sets of five for \$65.00 from the Munsell Color Company, Baltimore MD 21218, phone 301-243-2171.

Many industry manufacturers now judge color by the use of an automatic colorimeter system to take the subjective judgement out of this grading factor.

After preparation, "good color" French fries (Grade A) must be characteristically bright. The after-fry color may be extra light, light, medium light or medium. "Reasonably good color" (Grade B) French fries may be dull, but not off color. The fry color may be variable, exceeding the uniformity criterion from extra light to dark. After preparation, the variation should not seriously affect the appearance of the product.

The exact color of good quality potatoes varies considerably because of varietal differences, physical differences, types of fat used, areas of production and other variables. Color also varies because of the amount of browning induced by the frying process. The exact hue (provided it is typical of the product) is not important for grade except as it approaches the very light or very dark values. These values are important to buyers because certain markets and food service operators have strong preferences as to the lightness or darkness of the brown coloring.

Two separate and distinct color determinations are required:

1. Classifying the fry color as to its value (that is, its lightness or darkness) in order to establish the proper fry color designations; and
2. Evaluating and assigning the score points for color in compliance with the standards.

Uniformity of Size & Symmetry (Max.20): Potato products are graded according to uniformity of size and symmetry. Uniformity is rated highly. The presence of shorts and slivers lowers the grade. Shorts are units which vary from 1/2" to 1" in length. Slivers are defined as strips which are substantially smaller than the predominant size which weigh less than 1/3 the weight of an average strip of the same length.

French fried potatoes that are "practically uniform," in size and symmetry are Grade A. This factor may be scored up to a maximum of 20 points. Grade A may be given a score of from 18 to 20 points, provided that product is "practically uniform". Grade B may score from 16 to 17 points if the cuts are "reasonably uniform" in size and symmetry. (NOTE: This Grade factor does not include the length of normal shaped product.) If any (small) chips are present, they may

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slightly detract from the appearance of the product. Small pieces, slivers, and/or irregular pieces may make up not more than 15 percent for Grade A and 30 percent for Grade B.

Product with almost no chips and/or no more than 5 percent small pieces, slivers and/or irregular product may be awarded 20 points. A product with not more than 5 to 15 percent small pieces, slivers and/or irregular pieces may be awarded 18 points, provided that the chips present do not materially detract from the appearance.

Product with chips and/or more than 15 to 20 percent small pieces, slivers and/or irregular pieces may be given a score of 17 points. Only 16 points may be given if (a) the chips present detract seriously from appearance and/or (b) more than 20 to 30 percent are small pieces, slivers and/or irregular pieces.

Defects (Max.20): High quality products show very few signs of defects or imperfections such as rot, scab, peel, sunburn, insect bites, internal discoloration, discolored eyes, carbon, dirt, smashed or ragged product, and discolorations which affect the appearance and edibility of the product. Defects are measured by size and severity. The USDA classifies various defects by size and severity as follows:

<u>Defects</u>	<u>Insignificant Imperfections</u>	<u>Minor Defects</u>	<u>Major Defects</u>
Very light surface or internal discoloration of any size	X	---	---
Light brown surface or internal discoloration which are:			
smaller in volume than a sphere of 3/16" diameter	X	---	---
equal to or greater than the area of a circle or the volume of a sphere 3/16" but less than the area of a circle or volume of a sphere 5/16" in diameter	---	X	---
equal to or greater than the area of a circle or volume of a 5/16" diameter sphere	---	---	X
Dark brown surface or internal discolorations which are:			
smaller in size than the area of a circle or volume of a sphere 1/8" in diameter	X	---	---
equal to or greater than the area of a sphere 1/8" in diameter but less than the area of a circle or volume of a sphere 1/4" in diameter	---	---	X
greater than the area of a circle or volume of a 1/4" diameter sphere	---	---	X
Any condition which is offensive because of color, odor, character, or any reason	---	---	X

Grade A French fries can score from 18 - 20 points on defects provided the product is "practically free" from any combination of defects including carbon specs which may not more than "slightly" detract from the appearance or edibility of the product.

These tolerances apply to a 2-pound sample unit of $3/8"$ x $3/8"$ or over in which there should be a maximum of 18 total defects with no more than 4 major defects. Smaller units (less than $3/8"$ x $3/8"$) may have a maximum of 28 total defects with no more than 8 major defects.

Texture (Max. 30): Ideal texture is obtained from potatoes high in solids or starch content. It is the result of a comprehensive program involving seed selection, cultural practices, harvesting, storage and processing. Good texture is similar to that of a baked potato - mealy without being soggy. The outside should be crisp with a well defined shape. The prepared product should show no signs of sogginess and should not look translucent. It should not be hard or hollow.

The factor of texture is scored up to a maximum of 30 points. Grade A product may be given from 27 to 30 points for "good texture." Grade B may score from 24 to 26 points for "reasonably good texture", and any batch of French fries falling into this category (24-26 points) may not be graded above Grade B regardless of total score because of the limiting rule factor.

In grading procedures, texture is evaluated within three minutes after cooking and while the product temperature is well above room temperature.

The external surface of "good texture" French fry (Grade A) is moderately crisp, shows no separation from the inner portion, and is not excessively oily. The interior portion is well cooked, tender, and practically free of sogginess. Shoestrings may be moderately crisp throughout.

"Reasonably good texture" (Grade B) means that the external surface may be slightly hard or slightly tough, shows no more than moderate separation from the interior portion and is not excessively oily. The interior portion is well cooked, reasonably tender and reasonably free of sogginess.

Good texture varies somewhat with the potato varieties used and the geographical areas of production. Good texture may vary from somewhat cheese-like with a very fine-grained texture to a coarse-grained almost powdery texture.

Usual variations from acceptable textures are:

Sogginess. As the name implies, this characteristic refers to a wet pasty or mushy condition either loaded with water or oil. Probably the primary factor of sogginess is low solids fries or it may be induced by frying at too low a temperature. Often only a portion of a strip becomes soggy. Both the amount of the unit affected and the degree of sogginess must be considered in estimating the effect on texture.

Hardness. When this characteristic is present, interior portions are very firm, sometimes oily to the touch and raw in taste even if well cooked. Often - as with sogginess - only a portion of a strip may be

hard. A shoestring strip which has a characteristically moderately crisp texture throughout is not considered to have a hard texture.

Pull Away. When this characteristic is present, the interior portion of a strip has withdrawn from the outer shell, voiding 1/3 of the cross sectional area of a regular strip or 2/3 of the cross section of a shoestring.

Crisp Outer Surface. An overly crisp outer surface is a texture fault in any grade. A slight crispness is expected in Grade A, and the surfaces may be slightly hard or slightly tough in Grade B. Excessive crispness of the outer surfaces of fries are often caused by overcooking.

Excessive Oiliness. For reasons which are not always explainable, an unusual amount of oil may sometimes be retained by fries. This characteristic is very objectionable to food service operators as it affects the texture adversely. Excessive oiliness which occurs in processing may be detected by peeling the strips prior to cooking. If excessive oiliness does not disappear with normal preparation, the texture grade score must be lowered to reflect this condition.

PACKER GRADES AND LABELS

Packer Grades: Most French fries are offered for sale under packer grades. This means that packers have in-house grading programs. When a packer declares a product to be packer Grade A, he is certifying that his graders have followed the USDA grade standards. Packers' specs may often be slightly higher than (scores) the USDA minimum standards.

The same is true of length. When a packer declares that a lot of French fries conforms to a certain length, he is certifying that the product conforms to USDA length standards. Moreover, Federal regulations governing labeling require that the grade, length and styles as declared on the carton conform to acceptable guidelines. Throughout this manual, the terms Grade A and Grade B are used rather than the descriptive terms, Fancy and Extra Standard. However, most packers use both terms for Grade A, i.e, Grade A Fancy if the product is Grade "A", but rarely mention the grade if the product is Grade B.

Packer Labels: Most processors pack three or four labels of Grade A French fries. Different color labels may be used for extra long, long, and line flow, or the length may be shown on the box.

Although most large packers use an item code on their wholesale cartons, a smaller packer might rely on label alone. A packer may use a number-letter code to differentiate products according to quality, origin or style. For example, the item code number for Chef-Reddy 1/4 inch extra long shoestrings is A26 if packed in the Northwest and A263 if packed in the Midwest. A few packers also use a color code to differentiate length. For example, Chef-Reddy extra long fries are designated by a red label; long by a blue label; and line flow cuts as Golden Fry.

Carnation labels its Grade A extra long strips as either "Ultra Fries" or "Carnation"; Grade A long fancy fries are labeled either "Golden Spud", "Wild West" or "Mariner."

Major Buying Groups: In addition to packing potatoes under their own label, processors often pack under distributors' or users' labels. The most common distributor labels available to food service operators are those offered by the major "cooperative" or corporate buying groups. See Chart, Appendix D. A few buying groups, F.A.B., Inc. (Frosty Acres), Kraft, Nifda, Nugget and PYA Monarch have item codes printed on the label and some have an insignia which designates the region of pack, but only if packed in the Northwest.

The following buying groups do not use an item number for identification on the case: All Kitchens, Bonded, Code, CFS Continental, Federated Foods, Lil Brave, North American Food Service, Pleezing, Pocahontas, Pacific Gamble Robinson, Rykoff and Sysco. Buyers cannot order French fries from these buying groups by product code. However, under such circumstances, member distributors may have their own item code numbers imprinted on the boxes.

Section VI shows the product code numbers for most packers. The list does not include all packers since all did not respond to the request for information.

PLANT LOCATION VERSUS PRICE

Although large volume packers may depend on plants located in the Northwest for their main sources of supply, they may also supplement (or complement) their supply from plants located in the Midwest and/or Northeast. Substantial savings in freight rates can be made on products shipped from plants in the Midwest. For

example, the differences in freight rates from shipping points in designated states to Jackson, Mississippi are as follows:

<u>Origin</u>	Truck-load <u>Freight</u> *	Per Case <u>Freight</u> *
Boise, ID	\$2,550	\$1.86
Presque Isle, ME	2,350	1.71
Grande Forks, ND	1,800	1.31
Clark, SD	1,500	1.09
Plover, WI	1,350	\$0.98

* Total load weight 44,000 at 32 lb. per case gross = 1,375 cases/load.

Thus, a trailerload of French fries (1,375 cases) coming from Idaho or Maine (to Jackson, MS) would cost about \$1,000 more than fries shipped from Wisconsin. A trailerload is about the quantity of French fries which might be used by a school district with an ADP (average daily participation) of 3,000 - 3,500 offering French fries twice a week.

PRODUCT VARIATIONS

The potato processing industry is responding to the varied demands of the marketplace and the flexibility of the raw product by making available many different styles and sizes of frozen products which can be used as a complement to or substitute for conventional French fries. Whereas, in 1973, hash browns were practically the only frozen potato product variation available, by 1983 over 18 percent of all frozen potato products sold were variations. Each processor seems to have matched competition and gone one better by coming out with a new product. Although some of these products meet with unfavorable acceptance,

others become very successful. Product variations are generally not purchased by grade although the USDA Grade Standards does have a "catchall" section which covers "Other" French fried products.

Major portions of these products are the pre-formed types which consist of shreds or chunks of potato blended with seasonings and other ingredients and formed into various sizes and shapes, i.e., cylindrical, rectangular, triangular, round or patties. Some packers add vitamins and minerals or otherwise tailor these products to meet customers' specifications. Formed products are well suited for school food service and other congregate feeding agencies because portion control is exact and the product can be heated (or cooked) in an oven.

Other product variations include potato wedges. Some are cut with the skin on (skin cut). These are produced by using a knife with several blades intersecting at one point to cut the potato lengthwise into equal pie-shaped wedge sections. There are no standard terms in the industry for the size of wedges nor are there standards for the lengths of the cuts. Potato wedges are available in various thicknesses or cuts: A "regular cut" for one packer can mean 8 cuts from a medium length potato while it can mean 10 or 12 cuts to another packer. Wedges are also available in 4 and 16 cuts.

Slices can either be cut straight or crinkle, horizontal or random, with or without skins at thicknesses of 3/16" to 3/8". Full slices may be cooked in an oven or deep fried. A variation of the full slice is a very thin cross-cut crinkle cut, which is full of holes to provide extra crispness.

One of the most popular additions is the half potato skin with a uniform amount of residual potato meat. This product is processed so as to yield a light, even

color when deep fried or baked. The hollow center can be filled with meat and cheese to yield a two-ounce meat/meat alternate serving; or the centers can be filled with bits of seafood or vegetables and topped with melted cheese. "Half skins" may also be served as a dip snack.

With increased emphasis on fitness and health, skin-on products are growing in popularity. Leaving the skin on helps retain the nutrients under the skin and provides a wholesome look and full potato taste. Because of this feature, products with the skin on may be labeled "Natural" by some processors, "Country" or "Skincredible" by others, but are simply called "skin cut" throughout this manual. These products are available as fry cuts, wedges or slices.

NUTRITION

A serving of heated French fried potatoes (approximately 10 strips 2 to 3 1/2" in length) furnishes approximately 140 calories and contains the following:

Protein	3.6 grams	Iron	1.8 milligrams
Fat	8.4 grams	Vitamin C	21.0 milligrams
Carbohydrate	33.7 grams	Niacin	2.6 milligrams
Calcium	9.0 milligrams	Thiamine	0.14 milligrams

Plus traces of Riboflavin, Vitamin A and other minerals.

An important consideration is that food service operators know that well prepared French fries will be eaten, thus maximizing nutritient intake.

Child Nutrition: The Food Buying Guide for Child Nutrition Programs* list the following for frozen French fried potatoes.

1. Food as Purchased	2. Purchase Unit	3. Serving per purchase unit	4. Serving Size or portion contribution to the meal requirement	5. Purchase units for 100 servings	6. Additional yield information
Frozen					
French Fries-					
Regular					
Crinkle	5-lb. pkg.	50.5	1/4 cup heated vegetable (about 5 1/2 pieces, 3" long	2.0	
	Pound	10.1	1/4 cup heated vegetable	9.9	
French Fries-					
Shoestring					
Straight	4-1/2 lb.	79.0	1/4 cup heated vegetable	9.9	
	Pound	17.5	1/4 cup heated vegetable	6.7	

Shoestrings yield more servings than thicker cuts per wholesale package when served by volume (cups). The Food Buying Guide suggests that 17.5 servings in a pound (0.91 oz.) of 1/4 inch shoestrings is comparable to 10.1 servings per pound (1.58 oz.) of 3/8 inch to 1/2 inch crinkle cut French fries.

I. Published by the Nutrition and Technical Services Division, Food and Nutrition Service and Consumer Nutrition Division, Human Nutrition Information Service, U.S. Department of Agriculture and the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, January 1984.

IV PURCHASING GUIDELINES

IV. PURCHASING GUIDELINES

CHOOSING A PRODUCT

In purchasing French fries the first priority for a food service supervisor is to determine the items to serve in terms of patron acceptance, equipment available, variety, food costs and labor costs. Some guidelines are as follows:

- Determine exactly what to specify. Decide how the product will be prepared and what needs it will fill. For instance, if oven cooking is used, don't buy a product which is processed only for deep frying. Although most French fries by product design are either for oven cooking or deep frying, a few products can be cooked in either way.
- Crinkle cuts are better than straight cuts for oven cooking because they have more surface area.
- Wider cuts give more heat retention.
- The higher percentage of solids the more servings per pound and the greater the savings in cost, time and energy.
- Look for consistency in meeting grade and length requirements. Some processors have refined USDA specs and established criteria for their own products that exceed the USDA minimums for length and grade. Some packers have developed special processing techniques to assure consistency and enhance patron acceptance.

- Consider the cost per serving rather than cost per pound.
- A "cheap" fry which has a low yield and high fat use, may cost more per serving than a more expensive fry with a higher yield and lower fat use.
- Conduct patron acceptance tests to assure the selection of the right product.

In choosing the right potato for your needs it is essential that you keep in mind that quality levels vary within USDA Grade A designation. As can be seen from Section VI some companies have three grade ranges within Grade A, as well as variations in length designations. Some packers use different labels to differentiate between product from the Pacific Northwest, Midwest and Northeast, while others do not. The problem can be met by buyers being more specific with regard to length, texture, solids content, origin, labels and packer codes.

SPECIFYING

In specifying French fries, food service operators should avoid use of the term "or equal." This policy may leave the door open for a number of variations. Moreover, a food service supervisor should work with local distributors in selecting a French fry which can be delivered on a regular basis with a minimum of variations. The SPEC should include the appropriate information in an exact manner as the following example:

Buyers Item No.	B000
Product	Potatoes, French Fry
	Oven-ready
Packer	Simplot
Brand	Quick n' Crispy (Bake-a-Fry)
Style - Shape	Shoestring
- Thickness	1/4 x 1/4
Packer Code	35526
Lengths	Long
Grade	A
Solids	50 Percent
Pack Size	6/4-lb.
Net/Gross	24-/26 lb.

See Appendix E for examples of potato short specs as contained in the FNS Manual "Catalog of Specifications."

RECEIVING AND STORAGE

When a shipment is received at the food prep site, certain steps should be taken to:

- (a) Make sure that the proper product is delivered in good condition and
- (b) Store the product in such a manner to ensure the maintenance of the quality of the fries prior to cooking.

- **Receiving:** Several steps must be taken when the product is received to ensure correct delivery. In addition to checking for count the receiver must check for quality and condition as follows:
 - * **Quality:** First check the labels to see if the delivered product is in accord with the SPEC, particularly as related to packer (or distributor) code, labels, size, style and grade. This information should agree with the invoice (delivery ticket). Beware of substitutions.
 - * **Condition:** Check for ice crystals and breakage of the strips. If the French fries have been held at zero degrees up to the time of delivery there will be, at the most, only a sprinkling of ice crystals inside the bags. A heavy build-up of ice is a sign that the product has been at least partially thawed. A bag should be opened and checked for crystals and breakage. The cases should also be checked for obvious abuse, which may indicate excessive breakage of the potato strips.
 - * **Solids:** Send samples to a nearby lab for testing from time to time. The frequency will depend on purchasing methods, i.e., three times a year if purchasing on an annual contract. If a problem should develop in cooking, testing should be done as soon as possible.
- **Storage:** Frozen french fries should not be unrefrigerated longer than 30 minutes and should be stored in a clean freezer to avoid picking up odors which may alter the taste. Keep product frozen until ready to cook.

V KITCHEN PREPARATION

V. KITCHEN PREPARATION

Purchasing the highest quality French fries can mean little if they are not prepared and served properly. French fries which are high quality on arrival at the food service operation may rate substandard when served. Downgrading is due largely to improper cooking or holding after cooking. The following guidelines are suggested for maintaining quality in cooking and serving.

TO DEEP FRY

- Keep fries in freezer until ready to use.
- Set thermostat at 350 to 360° and check daily.
- When temperature is reached, place fries gently in basket.
- Fill only half the basket. Fries must be totally immersed in cooking oil for best results.
- Fry until crisp on the outside and mealy on the inside using the following guidelines:
 - If diameter is 1/4 inch cook for 2-1/4 to 2-3/4 minutes
 - If diameter is 5/16 inch cook for 2-3/4 to 3 minutes
 - If diameter is 3/8 inch cook for 3 to 3-1/2 minutes
 - If diameter is 1/2 inch cook for 3 to 3-1/2 minutes
 - If steak fries cook for 3-1/2 to 4 minutes
- Shake the basket lightly to drain fries; serve immediately or hold briefly under heat lamp.
- Select a frying oil (or shortening*) suitable for the results desired.

To Make-Ready

- Filter shortening and clean equipment daily to remove particles.
- Check accuracy of thermostat periodically.
- Add at least 20 percent new shortening daily. If 20 percent is not lost through absorption, drain enough so you may add 20 percent fresh.

* Shortening is a solid and oil a liquid.

To Produce Best Results During Cooking

DO NOT

- Overload fryer -- fill basket no more than half full
- Salt fries over the fryer
- Hang basket of finished fries over oil
- Fry too far ahead
- Pile up fries in holding pan or hold them longer than 8 minutes

Fryer Mediums - Shortenings and Oils

There are many types of highly refined, high performance shortenings available - liquids, solids, and blends of animal and hydrogenated vegetable oil. Fry life, not cost, is the governing factor of quality. Specific additives are used in top quality shortenings to give them longer fry life. The following characteristics will indicate the end of shortening shelf life:

- **Foaming** - Small bubbles that appear on the surface of the fryer and rise to about an inch above the shortening level. When this occurs the shortening, will no longer effectively fry the food and must be discarded.
- **Free Fatty Acids** - When a shortening begins to break down, fatty acids break off from the shortening and therefore are called "free fatty acids". When the free fatty acid level becomes too high, the shortening will no longer fry the foods to the proper quality level. At this point the shortening should be discarded. Color test kits are available from suppliers for testing free fatty acid levels.

- Excess darkening of the shortening also darkens the food. High performance shortenings often may not show breakdown by foaming because of fry life extenders and high performance characteristics. These types of shortening must be watched for the formation of color by the darkening of the food itself. If the temperature and frying time are correct and the food is still dark, then the shortening should be discarded and replaced with fresh shortening.

The chief enemies of a fry-type shortening are (1) heat, (2) air and light (which causes oxidation of the oil) and (3) foreign matter such as slivers and broken pieces of French fries.

Animal oils contain saturated fats that are known to raise the cholesterol levels in some individuals while vegetable oils such as corn and safflower oils contain polyunsaturated fats that may even decrease the body's tendency to produce cholesterol. Many fast food operators use a combination of vegetable oil and beef tallow (or other animal oil) to obtain the consistency and taste desired.

Fryer Care and Cleaning

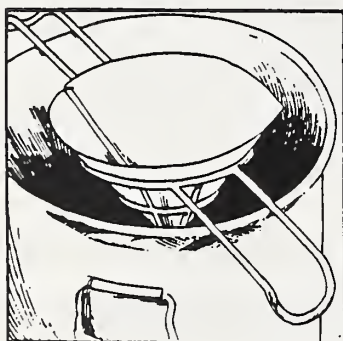
The quality of cooked French fries may depend on the care given the deep fat fryer. The fryer should be thoroughly scrubbed, rinsed and wiped to remove any deposits of polymerized (gummy, broken down) shortening. All traces of detergent or cleaning compound must be removed or chemical breakdown of oil may result.

Filtering the Shortening : For the best French fry quality and the longest fry life, shortening should be filtered regularly through a food service medium of which there are several:

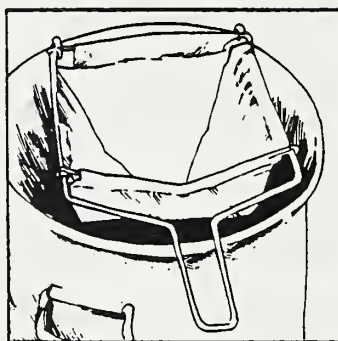
- High Quality Filter Paper, specially designed to remove contaminants from the shortening.

- Reuseable, Cloth or Plastic Type Filter Screens designed to filter shortening day after day.
- Mechanical Filtering Devices - Mechanical filtering shortening devices give excellent filtration by pumping shortening out of the fryer quickly and efficiently through a combination of filters and diatomaceous earth. The advantage of a mechanical device over the other types is the time saved and a possible safety factor (of spilling and being burned by the oil).

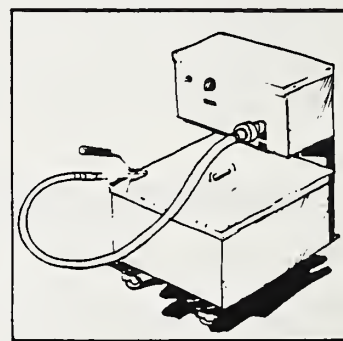
All of these filtering methods are good and effective when used regularly. In addition, there are powders available which can be added to the shortening to remove liquid contaminants.



Filter Paper



Reuseable Cloth



Mechanical Device

TO OVEN COOK

Method: Use shallow pans and do not grease except for hash browns. Time and temperature guide shown below is for gas or electric ovens and is based on a full load of 2 pans in a regular oven or 6 in a convection oven. Place potato products in a single layer in the pan to assure complete and even cooking. If you want to increase the quantity, increase the time instead of the temperature.

Product Type	Approximate Minutes of Heating Time	
	Regular Oven	Convection Oven *
	450°F	375°F
<hr/>		
French fries		
Regular:		
Straight & crinkle cut	20-30	15-25
Oven-style (crinkle cut)	15-20	12-18
Thin & Shoestring:		
Straight & crinkle cut	16-22	14-20
Oven-style (crinkle cut)	20	8-9
Potato rounds	15-20	12-18
Hash browns	35 **	20-25
<hr/>		

* Open the door of convection ovens slightly to prevent steaming the product.

** Oil pans generously and brush tops of potatoes with oil. Season to taste before placing in oven. For extra browning, raise oven temperature to 500°F throughout cooking process.

TO GRIDDLE OR PAN FRY HASH BROWNS

1. Break off desired number of shredded or diced hash brown potatoes and place on pre-heated, lightly oiled griddle or fry pan.
2. Brush top of potatoes with oil.
3. Fry on each side for 3 to 4 minutes or until golden brown.
4. Seasoning of hash browns can be done in a number of different ways. One common practice is to add slivers of red and green peppers and onions.

VI PRODUCT AND CODES

VI. PRODUCTS AND CODES

The following product information is provided by the various packers mentioned. Some packers limited their list to only those items recommended for purchase by schools or other similar congregate feeding establishments.

A. French Fry Strips for Oven Cooking.

The following products are recommended by the various potato processors specifically for oven cooking. If a product also is recommended for deep fat frying, it may also be listed in Section C. The solids content listed below may vary from year to year depending upon the growing conditions (see text) and is listed here as a guide. Solids reported are plus or minus two percent.

Product	Percent Solids	Code	Cut Size(a)	Length(b)	Pack/ Size(c)
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Packer: CARNATION

Carnation Brand - Grade A is printed on the carton.

Oven Crinkle Cut	36	3381-5	3/8	ExLong	6/6
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Packer: CHEF-REDDY

ChefReddy Brand - Grade A is printed on the carton.

Oven Shoestrings	34	CR46	1/4	ExLong	6/4-1/2
Oven Straight Cut	34	CR45	5/16	ExLong	6/5
Oven Crinkles	34	CR43	5/16	ExLong	6/5
Oven Shoestrings	34	CR26	1/4	Line Flow	6/4-1/2
Oven Straight Cut	34	CR25	5/16	Line Flow	6/5
Oven Crinkles	34	CR23	5/16	Line Flow	6/5
Oven Crinkles	34	CR40	3/8	Line Flow	6/5
Oven Crinkles	34	A40	1/2	Line Flow	6/5

Packer: GOURMET BRANDS

Gourmet Brand - Grade A is printed on the carton.

Oven Fries	34	A47 26	1/2	Long	6/4-1/2
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(a) Cut Size = thickness in inches (1/4 = 1/4"x1/4").

(b) Line Flow = Medium

(c) Number of packages per case/pounds per package

NA = Not applicable NR = Not Reported INSF = Insufficient Data

A. French Fry Strips for Oven Cooking (Con't.)

Product	Percent Solids	Code	Cut Size	Length	Pack/Size
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Packer: IDAHO FROZEN FOODS CORP.

RusEtts Brand - Grade A is printed on the carton.

Oven Crinkle Cuts	35	2689	1/2	ExLong	8/3
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Packer: INTERSTATE POTATO CO.

Interstate Premium Brand - Grade A is printed on the carton.

Oven Crinkle Cuts	NR	1576	1/2	Long	6/5
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Packer: LAMB-WESTON

Quick Oven Brand - Grade A is printed on the carton.

Shoestring	55	159	1/4	Long	6/4
Thin Straight Cuts	48	P29	3/8	Long	6/4
Thin Concertinas (CC)	45	P69	3/8	Long	6/4

Packer: McCAIN FOODS INC.

McCains Brand - Grade A is printed on the carton. The solids content of McCain products is available upon request.

Oven Straight Cut	NR	7063004	3/8	Medium	6/5
Oven Crinkle Cut	NR	7075004	1/2	Medium	6/5

Farm Fair Brand - Grade B but is not printed on carton.

Oven Straight Cut	NR	7065049	NR	Short	6/5
Oven Crinkle Cut	NR	7076049	NR	Short	6/5

Packer: MID-AMERICA POTATO CO.

Mapco Brand - Grade A is printed on the carton.

Oven Crinkle	NR	1576	1/2	Long	6/5
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Packer: ORE-IDA

Ore-Ida does not use the term Grade A or Fancy on the case because they feel that it implies USDA inspection. Ore-Ida will supply a letter to the buyer stating that the product meets or exceeds USDA Grade A standards.

Ore-Ida Brand

Oven Ready Crinkles	NR	0055	1/2	Long	6/5
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The Lunch Line (Idaho)

Oven Crisp Crinkles	NR	0605	1/2	Line Flow	8/3
Oven Crisp Shoestr.	NR	0606	1/4	Short	8/2-1/2

Premium House Brand (Wisc.)

Oven Ready Crinkles	NR	0072	1/2	Long	6/5
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A. French Fry Strips for Oven Cooking (Con't.)

Product	Percent Solids	Code	Cut Size	Length	Pack/ Size
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Packer: SIMPLOT

Quick N' Crispy Brand (Bake-A-Fry) - Grade A is printed on the carton.

Shoe Strings	53	35526	1/4	Long	6/4
Straight(Thin)	50	35426	5/16 x 3/8	Long	6/4
Crinkle Cut	49	35326	1/2	Long	6/4

Packer: TATER BOY

Tater Boy Brand - Grade A is printed on the carton.

Oven Curley Q's	35	20301	1/4	NA	4/6
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Tater Maid Blue Brand - Grade A is printed on the carton.

Oven Fries Crinkle	33	41523	3/8	Long	6/5
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Long Branch Brand.- No Grade shown on the carton.

Crispy Coat Batter	32	46401	3/8	NA	6/5
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Packer: TWIN CITY

Oven Good Brand - Grade A is printed on the carton.

Straight Cut	NR	23178	3/8	Long	6/5
Crinkle Cut	NR	23180	1/2	Long	6/5

B. Formed and Skin-cut Products for Oven Cooking

Formed products may be produced from by-product(s) of stick production i.e. pieces and slivers as well as shredded small or misshapen potatoes. The solids content of formed products is not applicable to the quality of a product because of variables in the manufacturing process. Thus solids content is not indicated in this table.

Product	Code	Size	Ct./lb.	Pack/ Size
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Packer: CARNATION

Carnation Brand - No grade shown on shredded products.

Oven Taters w/Vit. C	3350-5	.36 oz.	45	6/5
Tiny Triangles w/Vit. C	3348-5	1 oz.	16	6/5

Packer: CHEF-REDDY

ChefReddy Brand - Grade A is printed on the carton.

Potato Rounds	CR08	1 oz.	16	6/5
Potato Triangles	CR28	1 oz.	16	6/5
Oval Hash Brown Patty	CR99	1 oz.	16	6/5

Packer: GOURMET BRANDS

Gourmet Brand - Grade A is printed on the carton.

Potato Nuggets	A47 29	1/3 oz.	50	6/5
Potato Triangles	A47 32	2 oz.	8	6/5
Sun-Ups	A47 73	2-1/4 oz.	7	6/5
Peel on Wedges	A47 40	8 cut	NA	6/5

Packer: IDAHO FROZEN FOODS CORP.

RusÉttes Brand - Grade A is printed on the carton.

Spud Bud w/Vit. C	2105	.40 oz.	40	6/5
Tri-Patty w/Vit. C	2136	2 oz.	8	6/5
Tri-Patty w/Vit. C	2135	1.6 oz.	10	6/5
Spud-Skin Wedges	2126	8 Cut	NA	6/5
Spud-Skin Wedges	2127	10 Cut	NA	6/5
Potato Pancakes	2495	2 oz.	144	6/3
Puf-Ettes	2140	NA	65-70	6/5
Shredded Hash Browns	2150	NA	NA	3/5# tray
Shredded Hash Browns	2161	NA	NA	8/2-1/4# tray
IQF Hash Brown	2156	3 oz.	5-1/3	96/3 oz.

Packer: INTERSTATE POTATO CO.

Interstate Premium Brand - Grade A is printed on the carton.

Tater Tots	NR	.32 oz.	50	6/5
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B. Formed and Skin-cut Products for Oven Cooking (Con't.)

Product	Code	Size	Ct./lb.	Pack/ Size
Packer: LAMB-WESTON				
Lamb's Supreme Brand - Grade A is printed on the carton.				
Tater Roundabouts	A26	1-1/4x3/8	68	6/5
Tater Puffs	H30	3/4x1"	52	6/5
Side O'Browns	G53	4x3x1/2	7	6/5
Crinkle Cut Slices	B41	3/8" sl	NA	6/5
Tater Wedges	H31	1.6 oz.	10	6/5
Tater Wedges	B03	2.0 oz.	8	6/5
Lamb's Natural Brand - Grade A is printed on the carton.				
Natural Slices	B09	3/8" sl.	NA	6/5
Natural Cut Wedges	Q80	8 Cut	NA	6/5
Munchskins	P87	1 oz.	16	6/5
Packer: McCAIN FOODS INC.				
McCain Brand Products are Grade A but not marked on the case.				
Tater Puffs	7146001	NR	NR	6/5
Tater Puffs w/onion	7149001	NR	NR	6/5
Cottage Fry	7159001	NR	NR	6/5
Latkes	7141001	NR	NR	6/5
Triettes	7152001	NR	NR	6/5
Triettes w/onion	7171001	NR	NR	6/5
Tater State Generic - Grade B but not printed on carton.				
Tater State	7076050	NR	NR	6/5
Packer: MID-AMERICA POTATO CO.				
Mapco Brand Grade A is printed on the carton.				
Tater Tots w/Vit. C	1590	NR	NR	6/5
Country Hash Browns	1550	NR	NR	6/5
Packer: ORE-IDA				
Ore-Ida does not use the term Grade A or Fancy on the case because they feel that it implies USDA inspection. Ore-Ida will supply a letter to the buyer stating that the product meets or exceeds USDA Grade A standards.				
Ore-Ida Brand				
Spud Bites	0093	1/4 oz.	65-70	6/5
Tater Tots	1186	1/3 oz.	48-55	6/5
Golden Patties	0099	2 oz.	8	120/2 oz.
Golden Patties	0100	2.5 oz.	6.4	120/2.5
The Lunch Line				
Tater Tots	0187	1/3 oz.	48-55	6/5
Tater Tots w/Vit. C	1138	1/3 oz.	45-55	6/5

B. Formed and Skin-cut Products for Oven Cooking (Con't.)

Product	Code	Size	Ct./lb.	Pack/ Size
<u>Packer:</u> SIMPLOT				
Quick n'Crispy (Bake-A-Fry) Brand - Grade A is printed on the carton.				
Wedges, Skin-On	35826	10 Cut	Long	6/4
Preformers Brand - Grade A but not printed on the carton.				
Tater Gems	37001	1/3 oz.	53	6/5
Tater Sticks	37226	1/2 oz.	30	6/4
Tri-Taters	28001	2 oz.	8	6/5
101's (Patties)	43081	2-1/4 oz.	NA	12/20 pat.

Packer: TATER BOY

TaterBoy Brand - There is no grade for this coated (or breaded) product.

Tater Babies, Coated	45001	4 cut	26	6/5
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Packer: TWIN CITY

Oven Good Brand Grade A is printed on the carton.

Taters	26487	1/3 oz.	50	6/5
Tater Bars	26488	2 oz.	8	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying

The following products are recommended by the various packers for deep fat frying. If a product is also recommended for oven cooking, it may also be listed in Section A and B. Solids content reported may vary plus or minus two percent. The solids content of formed products is not applicable to the quality of the product because of variables in the manufacturing process.

Product	Percent Solids	Code	Size (in.)	Length	Pack/ Size (lb.)
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Packer: CARNATION - Carnation Brand - Grade A is printed on the carton.

Ultra Shoestring	35	3560-5	1/4	ExLong	6/6
Ultra Straight Cut	35	3561-5	5/16	ExLong	6/5
Shoestring	33	4708-5	1/4	ExLong	6/4-1/2
Straight Cut	32	3362-5	5/16	ExLong	6/5
Straight Cut	30	3361-5	3/8	ExLong	6/5
Steak Cut	30	3360-5	3/4	ExLong	6/5
Crinkle Cut	32	3357-5	5/16	ExLong	6/5
Crinkle Cut	30	3355-5	3/8	ExLong	6/5
Crinkle Cut	30	3351-5	1/2	ExLong	6/5
Straight w/Peel	28	3290-5	5/16	ExLong	6/5
Table Fries w/Peel	32	7154-5	NR	ExLong	6/5
Steak w/Peel	30	7155-5	7/8	ExLong	6/5
Diced w/Peel	28	7157-5	NR	NA	6/6
Deep Fry Taters	NA	3398-5	NA	NA	6/5
Shredded Hash Browns	NA	3356-5	NA	NA	96-3 oz.
Shredded Hash Browns	NA	3354-5	NA	NA	3/5
Kitchen Fry S w/Peel	NA	7152-5	NA	NA	6/5

Packer: CARNATION - Mariner Brand - Grade A is printed on the carton.

Shoestring	31	4719-5	1/4	Long	6/4-1/2
Straight Cut	30	3392-5	5/16	Long	6/5
Straight Cut	29	3391-5	3/8	Long	6/5
Steak Cut	27	3395-5	3/4	Long	6/5
Crinkle Cut	30	3394-5	5/16	Long	6/5
Crinkle Cut	29	3390-5	3/8	Long	6/5
Crinkle Cut	28	3389-5	1/2	Long	6/5

Packer CARNATION - Wild West Brand - Grade A is printed on the carton.

Shoestring	31	4710-5	1/4	Long	6/4-1/2
Straight Cut	30	3319-5	5/16	Long	6/5
Straight Cut	29	3318-5	3/8	Long	6/5
Steak Cut	27	3320-5	3/4	Long	6/5
Crinkle Cut	30	3317-5	5/16	Long	6/5
Crinkle Cut	29	3316-5	3/8	Long	6/5
Crinkle Cut	28	3315-5	1/2	Long	6/5

NA = Not Applicable NR = Not Reported INSF = Insufficient Data

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/Size (lb.)
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Packer CARNATION - Spudsville Brand No grade shown on carton. Solids content not reported.

Shoestring	NR	7121-5	1/4	Long	6/4-1/2
Straight Cut	NR	7129-5	5/16	Long	6/5
Steak Cut	NR	7121-5	3/4	Long	6/5
Crinkle Cut	NR	7125-5	3/8	Long	6/5
Crinkle Cut	NR	7126-5	1/2	Long	6/5

Packer CARNATION - Tastee Spud Brand (subject to availability). No grade shown on carton. Solids content not reported.

Shoestring	NR	4950-5	1/4	Line Flow	6/4-1/2
Straight Cut	NR	3858-5	5/16	Line Flow	6/5
Straight Cut	NR	3857-5	3/8	Line Flow	6/5
Steak Cut	NR	3859-5	3/4	Line Flow	6/5
Crinkle Cut	NR	3854-5	5/16	Line Flow	6/5
Crinkle Cut	NR	3856-5	3/8	Line Flow	6/5
Crinkle Cut	NR	3855-5	1/2	Line Flow	6/5

Packer CARNATION - Jiffi Brand, Grade B (subject to availability) Solids content and length not reported.

Shoestring	NR	4785-5	1/4	NR	6/4-1/2
Straight Cut	NR	3331-5	5/16	NR	6/5
Wedges	NR	7162-5	NA	NA	6/5
Table Fries	NR	7163-5	NA	NA	6/5

Packer CHEF REDDY - Red Label - Grade A is printed on the carton. A two number code (A41) is NW pack, three number code (A413) is either Minnesota or South Dakota pack.

Crinkle Cut	30	A41 A413 (MN)	1/2	ExLong	6/5
Crinkle Cut	30	A43 A433 (MN)	3/8	ExLong	6/5
Crinkle Cut	32	A42 A423 (MN)	5/16	ExLong	6/5
Straight Cut	30	A44 A443 (MN)	3/8	ExLong	6/5
Straight Cut	32	A45 A453	5/16	ExLong	6/5
Shoestring	34	A26 A263 (MN)	1/4	ExLong	6/4-1/2
AVD Shoestring	36	A573(MN)	1/4	ExLong	6/4-1/2
Steak Cut	28	A17 A173 (MN)	3/4	ExLong	6/5
Natural Potato Wedges	NA	A69	NA	ExLong	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/ Size (lb.)
<u>Packer</u> CHEF REDDY - Blue Label - Grade A is printed on the carton.					
Crinkle Cut	30	A20 A202 (SD) A203 (MN)	1/2	Long	6/5
Crinkle Cut	30	A21 A212 (SD) A213 (MN)	3/8	Long	6/5
Crinkle Cut	32	A22 A222 (SD) A223 (MN)	5/16	Long	6/5
Straight Cut	30	A23 A232 (SD) A233 (MN)	3/8	Long	6/5
Straight Cut	32	A24 A242 (SD) A243 (MN)	5/16	Long	6/5
Shoestring	34	A07 A252 (SD) A253 (MN)	1/4	Long	6/4-1/2
Steak	28	A27 A272 (SD) A273 (MN)	3/4	Long	6/5
Natural Potato Wedges	NR	A29	NA	Line Flow	6/5
<u>Packer</u> CHEF REDDY - Golden Fry Brand - Grade A is printed on the carton.					
Crinkle Cut	30	B90 B902 (SD) B903 (MN)	1/2	Line Flow	6/5
Crinkle Cut	30	B91 B912 (SD) B913 (MN)	3/8	Line Flow	6/5
Crinkle Cut	32	B92 B922 (SD) B923 (MN)	5/16	Line Flow	6/5
Straight Cut	30	B94 B942 (SD) B843 (MN)	3/8	Line Flow	6/5
Straight Cut	32	B95 B952 (SD) B953 (MN)	5/16	Line Flow	6/5
Shoestring	34	B96 B962 (SD) B963 (MN)	1/4	Line Flow	6/4-1/2
Steak	28	B97 B972 (SD) B973 (MN)	3/4	Line Flow	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/ Size (lb.)
<u>Packer</u> CHEF REDDY - Green Label - Grade A is printed on the carton.					
Crinkle Cut	30	A61	1/2	Line Flow	6/5
		A612 (SD)			
		A613 (MN)			
Crinkle Cut	30	A62	3/8	Line Flow	6/5
		A622 (SD)			
		A623 (MN)			
Crinkle Cut	32	A63	5/16	Line Flow	6/5
		A632 (SD)			
		A633 (MN)			
Straight Cut	30	A64	3/8	Line Flow	6/5
		A642 (SD)			
		A643 (MN)			
Straight Cut	32	A65	5/16	Line Flow	6/5
		A652 (SD)			
		A653 (MN)			
Shoestring	34	A66	1/4	Line Flow	6/4-1/2
		A662 (SD)			
		A663 (MN)			
Steak	28	A67	3/4	Line Flow	6/5
		A672 (SD)			
		A673 (MN)			

Packer CHEF-REDDY - Chef-Reddy Brand - Grade A is printed on the carton.

Potato Rounds	NA	A08	NA	NA	6/5
Shredded H. Browns-IQF	NA	A39	NA	NA	6/5
Shred. H. Brown-Scored	NA	A49	NA	NA	6/5
Shred. H Brown-Bulk	NA	A36	NA	NA	30
Loose Sh. H. Browns-IQF	NA	CR39	NA	NA	6/5
So. Style H. Browns	NA	A76	NA	NA	6/5
So. Style H.B. w/skin	NA	A87	NA	NA	6/5
Reddy Brown(oval pat)	NA	CR99	NA	NA	6/5
Potato Triangles	NA	A28	NA	NA	6/5
Thin Triangle	NA	CR29	NA	NA	6/5
Potato Skins	NA	PS1	NA	NA	6/5
Potato Strips	NA	PS2	NA	NA	6/5
Thin Natl (SSw/skin)	NR	Z66	1/4x1/4	ExLong	6/4-1/2
Thin Natl (SSw/skin)	NR	Z76	1/4x1/4	Line Flow	6/4-1/2
Reddy Natl(SC w/skin)	NR	Z69	1/4x1/2	ExLong	6/5
Reddy Natl(SC w/skin)	NR	Z79	1/4x1/2	Line Flow	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/ Size (lb.)
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Packer GOURMET - Elite Brand - Grade A is printed on the carton.

Shoestring	35	A96 23	1/4	Long	6/4-1/2
Straight Cut	35	A96 20	5/16	Long	6/5

Packer GOURMET - Gourmet Gold Brand - (No cholesterol) To maintain the cholesterol-free product, these fries must be fried in 100% pure vegetable oil.

Shoestring	34	A49 23	1/4	ExLong	6/4-1/2
Straight Cut	34	A49 20	5/16	ExLong	6/5
Straight Cut	34	A49 14	1/2	ExLong	6/5
Steak Mates	34	A49 02	3/4	ExLong	6/5
Crinkle Cut	34	A49 17	5/16	ExLong	6/5
Crinkle Cut	34	A49 05	1/2	ExLong	6/5
Wedges	NA	A47 40	8-cut	NA	6/5
Wedges	NA	A47 69	12-cut	NA	6/5
Harvest Fries	NA	A47 50	NA	NA	6/5
Potato Nuggets	NA	A47 29	NA	NA	6/5
Potato Triangles	NA	A47 32	NA	NA	6/5
Sun-Ups	NA	A47 73	NA	NA	96 Count

Packer GOURMET - Western Gem Brand - Grade A is printed on the carton.

Shoestring	30	A95 23	1/4	Long	6/4-1/2
Straight Cut	30	A95 20	5/16	Long	6/5
Straight Cut	30	A95 14	1/2	Long	6/5
Steak Mates	30	A95 02	NR	Long	6/5
Crinkle Cut	30	A95 17	5/16	Long	6/5
Crinkle Cut	30	A95 05	1/2	Long	6/5

Packer GOURMET - Fry Time Brand - Grade A is printed on the carton.

Shoestring	30	A41 23	1/4	Long	6/4-1/2
Straight Cut	30	A41 20	5/16	Long	6/5
Straight Cut	30	A41 14	1/2	Long	6/5
Steak Mates	30	A41 02	NR	Long	6/5
Crinkle Cut	30	A41 17	5/16	Long	6/5
Crinkle Cut	30	A41 05	1/2	Long	6/5
Custom Cut	30	A41 49	NR	Long	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/Size (lb.)
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Packer GOURMET - Encore Brand - Grade A is printed on the carton.

Shoestring	30	A31 23	1/4	Long	6/4-1/2
Straight Cut	30	A31 20	5/16	Long	6/5
Straight Cut	30	A31 14	1/2	Long	6/5
Steak Mates	30	A31 02	NR	Long	6/5
Crinkle Cut	30	A31 17	5/16	Long	6/5
Crinkle Cut	30	A31 05	1/2	Long	6/5

Packer IDAHO FROZEN FOODS CORP. - Rus-Ettes Brand - Grade A is printed on the carton.

Shoestring	35	2070	1/4	ExLong	6/4-1/2
Flavor Fry SS	34	2118	1/4	ExLong	6/6
Extra Fries	32	2119	1/4x5/8	ExLong	6/5
Flavor Fries Thin	33	2058	5/16	ExLong	6/5
Straight Cut	30	2033	3/8	ExLong	6/5
Steak Cut	30	2094	3/8x3/4	ExLong	6/5
Thin Crinkle	33	2045	5/16	ExLong	6/5
Crinkle Cut	30	2021	1/2	ExLong	6/5

Packer IDAHO FROZEN FOODS CORP. - Idaho Original Brand - Grade A is printed on the carton. Solids content not reported.

Shoestring	NR	1194	1/4	Long	6/4-1/2
Straight Cut	NR	1191	3/8	Long	6/5
Crinkle Cut	NR	1190	1/2	Long	6/5
Thin Crinkle	NR	1192	5/16	Long	6/5
Straight Thin Cut	NR	1193	5/16	Long	6/5
Steak Cut	NR	1195	3/8x3/4	Long	6/5

Packer IDAHO FROZEN FOODS CORP. - Champ Brand Grade A is printed on the carton. Solids content not reported.

Shoestring	NR	0255	1/4	Line Flow	6/6
Straight Cut	NR	0218	3/8	Line Flow	6/5
Crinkle Cut	NR	0206	1/2	Line Flow	6/5
Thin Crinkle	NR	0230	5/16	Line Flow	6/5
Straight Thin Cut	NR	0231	5/16	Line Flow	6/5
Steak Cut	NR	0200	3/8x3/4	Line Flow	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Solids	Code	Size (in.)	Length	Size (lb.)
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Packer LAMB WESTON - Lamb's Supreme Brand - Grade A is printed on the carton.

Mor-Fries SS	37	D94	3/16	ExLong	6/4
HiFries SS (AV)	35	A01	1/4	ExLong	6/4-1/2
Straight Cut	33	B36	3/8	ExLong	6/5
Straight Cut	33	D76	1/2	ExLong	6/5
Platter Fries	32	Q64	1/2x1/4	ExLong	6/5
Steak House Fries	NR	E02	3/4x3/8	ExLong	6/5
Concertinas CC	33	E11	1/2	ExLong	6/5
Crinkle Cut	33	C01	5/16	ExLong	6/5
Crinkle Cut	33	C93	1/2	ExLong	6/5
Crinkle Cut Slices	30	B41	NA	NA	6/5
Roundabouts	NA	A26	Formed	NA	6/5
Tater Wedges	NA	H31/B03	1.6oz/2 oz	NA	6/5
Side O'Browns	NA	G53	2-1/4 oz.	NA	12/20 pc.
Shredded Hashbrowns	NA	Q10	3 oz.	NA	96/3 oz.
Crispy Browns	NA	C65	2-1/4 oz.	NA	12/18

Packer LAMB WESTON - Lamb's Select Brand - Grade A is printed on the carton.

Shoestring	36	M43	1/4	ExLong	6/6
Straight Cut	34	N87	5/16	ExLong	6/5

Packer LAMB WESTON - Lamb's Brand - Grade A is printed on the carton.

Burger Fries SS	32	M88	1/4	ExLong	6/4-1/2
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Packer LAMB WESTON - Lamb's Natural Brand - Grade A is printed on the carton.

Natural Slices	NA	B09	3/8	NA	6/5
Natural Wedges	32	Q80	8-cut	NA	6/5
Natural Trim Fries	34	B16	3/8x1/4	ExLong	6/5
Natural Platter Fries	32	A56	1/4x1/2	ExLong	6/5
MunchSkins	36	P87	NA	NA	6/4
Country Hash Browns	NA	C73	Diced	NA	6/6
Criss Cut Fries	37	P55	NA	NA	6/4-1/2

Packer LAMB WESTON - Tater Valley Brand - Grade A is printed on the carton.
Solids content is variable therefore not reported.

Shoestring	NR	J67	1/4	Long	6/4-1/2
Straight Cut	NR	C85	5/16	Long	6/5
Straight Cut	NR	B90	3/8	Long	6/5
Crinkle Cut	NR	C46	5/16	Long	6/5
Crinkle Cut	NR	D64	1/2	Long	6/5

Packer LAMB WESTON - Quick Oven - May also be cooked in an oven. Grade A is printed on the carton.

Shoestring	55	I59	1/4	Long	6/4
Straight Cut	48	P29	5/16	Long	6/4
Concertinas CC	45	P69	3/8	Long	6/4

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying

Product	Percent Solids	Code	Size (in.)	Length	Pack/Size (lb.)
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Packer McCAIN FOODS INC. - McCain Brand - Grade A is printed on the carton. Information on solids content is available upon request.

Shoestring	NR	7105001	1/4	ExLong	6/4-1/2
Crinkle Cut	NR	7072001	1/2	ExLong	6/5
Crinkle Cut	NR	7071001	5/16	ExLong	6/5
Crinkle Cut	NR	7074001	3/8	ExLong	6/5
Straight Cut	NR	7065001	3/8	ExLong	6/5
Straight Cut	NR	7062001	5/16	ExLong	6/5
Steak Fries	NR	7065001	---	ExLong	6/5

Packer McCAIN FOODS INC. - McCain Gold Brand - Grade A is printed on the carton. Information on solids content is available upon request.

Shoestring	NR	7086005	1/4	ExLong	6/4-1/2
Crinkle Cut	NR	7072005	1/2	ExLong	6/5
Crinkle Cut	NR	7071005	5/16	ExLong	6/5
Straight Cut	NR	7065005	3/8	ExLong	6/5
Straight Cut	NR	7062005	5/16	ExLong	6/5
Steak Fries	NR	7165005	NR	ExLong	6/5

Packer McCAIN FOODS INC. - McCain Super Brand - Grade A is printed on the carton. Information on solids content is available upon request.

Shoestring	NR	7086001	1/4	ExLong	6/4-1/2
Straight Cut	NR	7084001	5/16	ExLong	6/5

Packer McCAIN FOODS INC. - Caterpac Brand - Grade A is printed on the carton. Information on solids content is available upon request.

Shoestring	NR	7115002	1/4	Long	6/4-1/2
Crinkle Cut	NR	7080002	1/2	Long	6/5
Crinkle Cut	NR	7078002	5/16	Long	6/5
Crinkle Cut	NR	7074002	3/8	Long	6/5
Straight Cut	NR	7079002	3/8	Long	6/5
Straight Cut	NR	7070002	5/16	Long	6/5
Steak Fries	NR	7165002	NR	Long	6/5

Packer McCAIN FOODS INC. - Pine Tree Brand - Grade A is printed on the carton. Information on solids content is available upon request.

Shoestring	NR	7115004	1/4	ExLong	6/4-1/2
Crinkle Cut	NR	7080044	1/2	Long	6/5
Crinkle Cut	NR	7078044	5/16	Long	6/5
Crinkle Cut	NR	7074044	3/8	Long	6/5
Straight Cut	NR	7079044	3/8	Long	6/5
Straight Cut	NR	7070044	5/16	Long	6/5
Steak Fries	NR	7165044	NR	Long	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/Size (lb.)
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Packer McCAIN FOODS INC. - Singer Brand - Grade A is printed on the carton. Information on solids content is available upon request.

Shoestring	NR	7115099	1/4	ExLong	6/4-1/2
Crinkle Cut	NR	7080099	1/2	Long	6/5
Straight Cut	NR	7079009	3/8	Long	6/5
Straight Cut	NR	7070099	5/16	Long	6/5
Steak Fries	NR	7165099	NR	Long	6/5

Packer McCAIN FOODS INC. - Snowflake Brand - Grade A is printed on the carton. Information on solids content is available upon request.

Shoestring	NR	7115040	1/4	ExLong	6/4-1/2
Crinkle Cut	NR	7080040	1/2	Long	6/5
Crinkle Cut	NR	7078040	5/16	Long	6/5
Crinkle Cut	NR	7074040	3/8	Long	6/5
Straight Cut	NR	79040	3/8	Long	6/5
Straight Cut	NR	70040	5/16	Long	6/5
Steak Fries	NR	65040	NR	Long	6/5

Packer McCAIN FOODS INC. - Taterhouse Brand, Grade B - Grade is not shown on carton. Information on solids content is available upon request.

Shoestring	NR	7115047	1/4	Medium	6/4-1/2
Crinkle Cut	NR	7048047	5/16	Medium	6/5
Straight Cut	NR	7061047	3/8	Medium	6/5

Packer MID-AMERICA POTATO CO. - Big Beaver Brand - Grade A is printed on the carton. Mid-America reports that the available data on solids content is insufficient for publication at this time.

Shoestring	INSF	1011	1/4	Long	6/4-1/2
Straight Cut	INSF	1013	5/16	Long	6/5
Straight Cut	INSF	1015	3/8	Long	6/5
Crinkle Cut	INSF	1014	5/16	Long	6/5
Crinkle Cut	INSF	1016	3/8	Long	6/5

Packer MID-AMERICA POTATO CO. - Honeybee Brand - Grade A is printed on the carton. Mid-America reports that the available data on solids content is insufficient for publication at this time.

Shoestring	INSF	1111	1/4	Long	6/4-1/2
Straight Cut	INSF	1113	5/16	Long	6/5
Straight Cut	INSF	1115	3/8	Long	6/5
Crinkle Cut	INSF	1114	5/16	Long	6/5
Crinkle Cut	INSF	1116	3/8	Long	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/Size (lb.)
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Packer MID-AMERICA POTATO CO. - Apache Brand - Grade A is printed on the carton. Mid-America reports that the available data on solids content is insufficient for publication at this time.

Shoestring	INSF	1211	1/4	Long	6/4-1/2
Straight Cut	INSF	1213	5/16	Long	6/5
Straight Cut	INSF	1215	3/8	Long	6/5
Crinkle Cut	INSF	1216	3/8	Long	6/5
Steak Fries	INSF	1217	NR	Long	6/5

Packer MID-AMERICA POTATO CO. - Top Cat Brand - Grade A is printed on the carton. Mid-America reports that the available data on solids content is insufficient for publication at this time.

Shoestring	INSF	1311	1/4	Line Flow	6/4-1/2
Straight Cut	INSF	1313	5/6	Line Flow	6/5
Straight Cut	INSF	1315	3/8	Line Flow	6/5
Crinkle Cut	INSF	1316	3/8	Line Flow	6/5

Packer MID-AMERICA POTATO CO. - Sleeping Bear Brand - Grade A is printed on the carton. Mid-America reports that the available data on solids content is insufficient for publication at this time.

Shoestring	INSF	1411	1/4	Line Flow	6/4-1/2
Straight Cut	INSF	1413	5/16	Line Flow	6/5
Straight Cut	INSF	1416	3/8	Line Flow	6/5
Crinkle Cut	INSF	1416	3/8	Line Flow	6/5

Packer MID-AMERICA POTATO CO. - Buyer's Delight Brand - Grade A is printed on the carton. Mid-America reports that the available data on solids content is insufficient for publication at this time.

Shoestring	INSF	1611	1/4	Short	6/4-1/2
Straight Cut	INSF	1613	5/16	Short	6/5
Straight Cut	INSF	1616	3/8	Short	6/5
Crinkle Cut	INSF	1613	5/16	Short	6/5
Crinkle Cut	INSF	1616	3/8	Short	6/5

Packer MID-AMERICA POTATO CO. - Mapco Brand - Grade A is printed on the carton.

Steak Fries	INSF	1517	NR	Long	6/5
Cottage Fries	NA	1518	NA	NA	6/5
Natural Straight	INSF	1565	NR	Long	6/5
Shrd.Scored HB	NA	8152	NA	NA	3/5
Indiv. Hash Browns	NA	8151	3 oz.	NA	96/3oz.

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/ Size (lb.)
Packer ORE-IDA - Ore-Ida Brand - Ore-Ida does not use the term Grade A or Fancy on the case because they feel that it implies USDA inspection. Ore-Ida will supply a letter to a school district stating that the product meets or exceeds USDA Grade A standards.					
Steak Fries	NR	0226	3/8x3/4	ExLong	6/5
Straight Cut	NR	0992	3/8	ExLong	6/5
Straight Cut	NR	0910	5/16	ExLong	6/5
Air Dried A/V SC	NR	0840	5/16	ExLong	6/5
Crinkle Cut	NR	0993	1/2	ExLong	6/5
Crinkle Cut	NR	0418	3/8x5/16	ExLong	6/5
Shoestring	NR	0873	1/4	ExLong	6/4-1/2
Air Dried A/V SS	NR	0588	1/4	ExLong	6/6
Maxi Fries	NR	0203	1/4x1/2	ExLong	6/5
Shred.Scored H B	NA	0166	3 oz.	NA	96/3 oz.
Shredded Hash Browns	NA	1096	3 oz.	NA	96/3 oz.
Shredded Hash Browns	NA	0091	NA	NA	3/5
Seasoned Shredded HB	NA	1217	3 oz.	NA	96/3 oz.
Cheddar Browns	NA	0218	3 oz.	NA	96/3 oz.
Mexi Fries	NR	0440	2x1x7/16	NA	6/5
Cottage Fries	NA	0073	NA	NA	6/5
Home Fries	NA	0761	NA	NA	6/4-1/2
Country Style (skin on)					
Wedges	NA	0024	8 cut	ExLong	6/5
Wedges	NA	0880	10 cut	ExLong	6/5
Wedges	NA	0872	16 cut	ExLong	5/4
Potato Planks	NR	0889	NA	ExLong	6/5
Natural Fries	NA	0441	NA	NA	6/5
Straight Cut	NR	0200	1/4x3/8	ExLong	6/5
Chunky Hash Browns	NA	0335	NA	NA	6/6

Packer ORE-IDA - Premium House Brand (Wisc.) - No grade shown on carton. See above.

Steak Fries	NR	1233	3/8x3/4	ExLong	6/5
Straight Cut	NR	1231	3/8	ExLong	6/5
Straight Cut	NR	1238	5/16	ExLong	6/5
Air Dried A/V SC	NR	1240	5/16	ExLong	6/5
Crinkle Cut	NR	1230	1/2	ExLong	6/5
Crinkle Cut	NR	1234	3/8x5/16	ExLong	6/5
Shoestring	NR	1232	1/4	ExLong	6/4-1/2
Air Dried A/V SS	NR	1239	1/4	ExLong	6/6
Wedges	NR	1279	10 cut	ExLong	6/5
Shred. Hash Browns	NA	1237	3 oz.	NA	96/3 oz.
Seasoned Shredded HB	NA	1229	3 oz.	NA	96/3 oz.
Country Style (skin on)					
Wedges	NA	0024	8 cut	ExLong	6/5
Wedges	NA	0872	16 cut	ExLong	6/5
Natural Fries	NA	0441	NA	ExLong	6/5
Straight Cut	NR	0200	1/4x3/8	ExLong	6/6
Chunky Hash Browns	NA	0335	NA	NA	6/6

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/ Size (lb.)
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Packer ORE-IDA - Idaho Valley Brand - Grade not shown.

Shoestring	NR	0107	1/4	Long	6/4-1/2
Crinkle Cut	NR	0399	1/2	Long	6/5
Crinkle Cut	NR	0438	5/16	Long	6/5
Straight Cut	NR	0427	1/2	Long	6/5
Straight Cut	NR	0432	5/16	Long	6/5
Steak Cut	NR	1054	NR	Long	6/5

Packer SIMPLOT - Quick n' Crispy (Bake-A-Fry) Brand - Grade A is printed on the carton.

Shoestring	55	35526	1/4	Long	6/4
Straight Cut	48	35426	5/16x3/8	Long	6/4
Crinkle Cut	45	35326	1/2	Long	6/4
Wedges	NR	35826	10-cut	Long	6/4

Packer Simplot - Blue Ribbon Brand - Grade A is printed on the carton.

Shoestring	35	46414	1/4	ExLong	6/4-1/2 (Flat
Shoestring	35	46420	1/4	ExLong	6/6 (Pillo pk)
Shoestring	35	46413	1/4	ExLong	6/6 (Flat pk)
Straight (Thin)	34	45439	5/16x3/8	ExLong	6/5

Packer SIMPLOT - Preformers Brand - Product is Grade A but not printed on carton.

Tater Gems	NA	37001	1/3 oz.	NA	6/5
Tater Sticks	NA	37226	1/2 oz.	NA	6/4
Tri-Taters	NA	28001	2 oz.	NA	6/5
101's (Patties)	NA	43081	2-1/4 oz.	NA	12/20 pat.
Tater Bucks	NA	37401	1-1/4 dia.x3/8		68

Packer TATER BOY - Tater Boy Blue Brand - Grade A is printed on the carton.

Shoestring	33	31007	1/4	ExLong	6/4-1/2
Straight Cut	32	41207	5/16	ExLong	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/Size (lb.)
<u>Packer</u> TATER BOY - Tater Boy Brand - Grade A is printed on the carton.					
Shoestring	33	31001	1/4	ExLong	6/4-1/2
Straight Cut	32	41201	5/16	ExLong	6/5
Straight Cut	31	41401	3/8	ExLong	6/5
Crinkle Cut	32	41301	5/16	ExLong	6/5
Crinkle Cut	31	41501	3/8	ExLong	6/5
Crinkle Cut	31	41701	1/2	ExLong	6/5
Steak Cut	29	41801	3/8x3/4	ExLong	6/5
Curley Q Fries	31	20001	1/4" cut	NA	4/6
Curley Q Fries	30	20101	1/3" cut	NA	6/6
RibCut Fries	29	42101	NA	NA	6/5
CrossCut Fries	28	42301	NA	NA	6/5
Wedges (Peel on)	27	42501	10-cut	NA	6/5
Long Branch Fries	32	46401	NA	NA	6/5
Filet Fries (Peel on)	29	42001	1/2x1/4	ExLong	6/5
Home Fries (Peel on)	27	42201	NA	NA	6/5
Hash Brwn IQF Port	NA	89633	3 oz.	NA	96/3 oz.
Shredded Slab HB	NA	41725	NA	NA	8/2-1/4

Packer TATER BOY - Walla Walla Brand - Grade A is printed on the carton.

Shoestring	32	31011	1/2	Long	6/4-1/2
Straight Cut	31	41211	5/16	Long	6/5
Straight Cut	30	41411	3/8	Long	6/5
Crinkle Cut	31	41311	5/16	Long	6/5
Crinkle Cut	30	41511	3/8	Long	6/5
Crinkle Cut	30	41711	1/2	Long	6/5

Packer TATER BOY - Bits O'Honey Brand - Grade A is printed on the carton.

Shoestring	32	31009	1/4	Long	6/4-1/2
Straight Cut	31	41209	5/16	Long	6/5
Straight Cut	30	41409	3/8	Long	6/5
Crinkle Cut	31	41309	5/16	Long	6/5
Crinkle Cut	30	41509	3/8	Long	6/5

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/Size (lb.)
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Packer TATER BOY - Tatermaid - Grade A is printed on the carton.

Shoestring	31	31021	1/4	Line Flow	6/4-1/2
Straight Cut	30	41221	5/16	Line Flow	6/5
Straight Cut	29	41421	3/8	Line Flow	6/5
Crinkle Cut	30	41321	5/16	Line Flow	6/5
Crinkle Cut	29	41521	3/8	Line Flow	6/5
Crinkle Cut	29	41721	1/2	Line Flow	6/5
Steak Cut	28	41821	3/8x3/4	Line Flow	6/5

Packer TATER BOY - Flavorkist - Grade A is printed on the carton.

Shoestring	31	31019	1/4	Line Flow	6/4-1/2
Straight Cut	30	41219	5/16	Line Flow	6/5
Straight Cut	29	41419	3/8	Line Flow	6/5
Crinkle Cut	30	41319	5/16	Line Flow	6/5
Crinkle Cut	29	41519	3/8	Line Flow	6/5

Packer TATER BOY - Inland Valley (Grade B) - Grade is not printed on the carton.

Shoestring	30	31025	1/4	Line Flow	6/4-1/2
Straight Cut	29	41225	5/16	Line Flow	6/5
Straight Cut	28	41425	3/8	Line Flow	6/5
Crinkle Cut	29	41325	5/16	Line Flow	6/5
Crinkle Cut	28	41525	3/8	Line Flow	6/5
Crinkle Cut	28	41725	1/2	Line Flow	6/5

Packer TWIN CITY FOODS - Flav-R-Pac Brand - Grade A is printed on the carton.

Crinkle Cut	NR	23122	5/16	ExLong	6/5
Crinkle Cut	NR	23356	3/8	ExLong	6/5
Crinkle Cut	NR	23121	1/2	ExLong	6/5
Straight Cut	NR	23119	5/16	ExLong	6/5
Straight Cut	NR	23120	3/8	ExLong	6/5
Straight Cut	NR	23147	1/2	ExLong	6/5
SC/High Yield	NR	23173	5/16	ExLong	6/5
Hash Browns	NA	26332	3 oz.	NA	96/3 oz.
Taters	NA	26369	50 ct	NA	6/5
Tater Bars	NA	26422	2 oz.	NA	6/5
Tater Patties	NA	26627	2-1/4 oz.	NA	6/5

Packer TWIN CITY FOODS - Slim Jim Brand - Grade A is printed on the carton.

Shoestring	NR	13123	1/4	ExLong	6/4-1/2
SS/High Yield	NR	23176	1/4	ExLong	6/4-1/2

C. French Fry Strips, Formed and Skin Cut Products for Deep Fat Frying (Con't.)

Product	Percent Solids	Code	Size (in.)	Length	Pack/ Size (lb.)
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Packer TWIN CITY FOODS - Big Daddy Brand - Grade A is printed on the carton.

Steak Cut	NR	23165	3/8x3/4	ExLong	6/5
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Packer TWIN CITY FOODS - Rawhide Brand - Grade A is printed on the carton.

Straight Cut w/skin	NR	23643	1/4	Long	6/5
Straight Cut w/skin	NR	23647	3/8	Long	6/5
Straight Cut w/skin	NR	23646	1/4x3/8	Long	6/5
Steak cut w/skin	NR	23645	3/8x3/4	Long	6/5
Wedge w/skin	NR	26571	8 cut	Long	6/5

Packer TWIN CITY FOODS - Zero Kist Brand - Grade A is printed on the carton.

Crinkle Cut	NR	23179	5/16	Line Flow	6/5
Crinkle Cut	NR	23648	1/2	Line Flow	6/5
Shoestring	NR	23312	1/4	Line Flow	6/5
Straight Cut	NR	22955	3/8	Line Flow	6/5
Straight Cut	NR	23005	5/16	Line Flow	6/5

D. French Fry Strips for Oven Cooking Offered by Major Buying Groups

Some buying groups which distribute French fries under their controlled labels do not use product code numbers on their case. In such instances, buyers cannot order French fries from these distributors by product code. The following firms do not list product codes on their cases or did not provide the information as requested.

All Kitchens
Bonded
CFS Continental
Code
Federated Foods
Lil Brave

North American Food Service
Pleezing
Pocahontas
Pacific Gamble Robinson Co.
S. E. Rykoff
Sysco Food Services, Inc.

The following buying groups list a product code on their case. Solids content reported is plus or minus two percent.

Product	Percent Solids	Code	Size	Length	Pack/Size
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Buying Group: FROSTY ACRES - Red Label Grade A is printed on the carton.

Crinkle Cut	340	27591	1/2	ExLong	8/3
Straight Cut	340	27476	1/2	ExLong	6/5

Buying Group: FROSTY ACRES - Blue Label Grade A is printed on the carton.

Crinkles	34	27474	3/8	Line Flow	8/3
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Buying Group: KRAFT - 5 Star Grade A is printed on the carton.

Crinkle Cut	34	6839	5/16	ExLong	6/5
Triangles	NA	6826	2 oz.	NA	6/5

Buying Group: Nifda, Inc. - Prime Fries (Northwest) Grade A is printed on the carton.

Straight Cut	34	05050	1/2	ExLong	8/3
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Buying Group: Nifda, Inc. - Royal Fries Grade A is printed on the carton.

Straight Cut	34	05150	1/2	ExLong	8/3
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Buying Group: Nifda, Inc. - Mighty Fries Grade A is printed on the carton.

Crinkle Cut	34	05240	1/2	Long	6/5
Straight Cut	34	05250	1/2	Long	8/3

Buying Group: NUGGET - Black Label Grade A is printed on the carton.

Shoestring	34	0189	1/4	Long	6/4
Crinkle Cut w/Vit C	33	0187	5/16	Long	6/4
Crinkle Cut	33	0530	1/2	Long	6/5
Mini Fries w/Vit C	33	0235	NR	NR	6/4-1/2

E. French Fry Strips, Formed and Skin-Cut Products for Deep Fat Frying Offered by Major Buying Groups

Product	Percent Solids	Code	Size	Length	Pack/Size
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Buying Group FROSTY ACRES - Red Label Grade A is printed on the carton.

Crinkle Cut	30	27590	1/2	ExLong	6/5
Crinkle Cut	30	27599	3/8	ExLong	6/5
Crinkle Cut	32	27598	5/16	ExLong	6/5
Straight Cut	30	27593	3/8	ExLong	6/5
Straight Cut	32	27592	5/16	ExLong	6/5
Shoestring	32	27596	1/4	ExLong	6/4-1/2
Steak Cuts	28	27594	3/8 x 7/8	ExLong	6/5

Buying Group FROSTY ACRES - Brown Label Grade A is printed on the carton.

Crinkle Cut	30	27471	1/2	Long	6/5
Crinkle Cut	30	27465	3/8	Long	6/5
Crinkle Cut	32	27462	5/16	Long	6/5
Straight Cut	30	27499	3/8	Long	6/5
Straight Cut	32	27492	5/16	Long	6/5
Shoestring	32	27508	1/4	Long	6/4-1/2
Steak Cuts	28	27502	3/8 x 7/8	Long	6/5

Buying Group FROSTY ACRES - Blue Label Grade A is printed on the carton.

Crinkle Cut	30	27464	1/2	Line Flow	6/5
Crinkle Cut	30	27463	3/8	Line Flow	6/5
Crinkle Cut	32	27460	5/16	Line Flow	6/5
Straight Cut	30	27495	3/8	Line Flow	6/5
Straight Cut	32	27490	5/16	Line Flow	6/5
Shoestring	32	27510	1/4	Line Flow	6/4-1/2
Steak Cuts	28	27453	3/8 x 7/8	Line Flow	6/5

Buying Group FROSTY ACRES - Garden Delight - Green Label Grade B not printed on carton.

Crinkle Cut	NR	27485	1/2	Line Flow	6/5
Crinkle Cut	NR	27479	3/8	Line Flow	6/5
Crinkle Cut	NR	27456	5/16	Line Flow	6/5
Straight Cut	NR	27487	3/8	Line Flow	6/5
Straight Cut	NR	27494	5/16	Line Flow	6/5
Shoestring	NR	27513	1/4	Line Flow	6/4-1/2
Steak Cuts	NR	27483	3/8 x 7/8	Line Flow	6/5

Buying Group FROSTY ACRES - Colonial Brand Grade is not printed on carton.

Crinkle Cut	NR	27475	1/2	Shorts	6/5
Crinkle Cut	NR	27466	3/8	Shorts	6/5
Crinkle Cut	NR	27488	5/16	Shorts	6/5
Straight Cut	NR	27469	3/8	Shorts	6/5
Straight Cut	NR	27458	5/16	Shorts	6/5
Shoestring	NR	27512	1/4	Shorts	6/4-1/2

E. French Fry Strips, Formed and Skin-Cut Products for Deep Fat Frying Offered by Major Buying Groups

Solids	Percent Code	Size	Length	Size	Pack/ Product
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Buying Group: KRAFT - 5 Star (Blue Label) Grade A is printed on the carton. Solids are plus or minus 4 percent.

Crinkle Cut	32	6802	1/2	ExLong	6/5
Crinkle Cut	32	6807	5/16	ExLong	6/5
Straight Cut	32	6800	3/8	ExLong	6/5
Straight Cut	32	6801	5/16	ExLong	6/5
Straight Cut Hi Yield	33*	6811	5/16	ExLong	6/5
Shoestring Hi Yield	34*	6804	1/4	ExLong	6/4-1/2
Steak Cuts	32	6803	3/8 x 13/16	ExLong	6/5
Wedge Cut w/skin	32	6808	8 Cut	NA	6/5
Hash Brn Patty	NA	6815	NA	NA	6/5
Shrd Hash Brn	NA	6825	NA	NA	6/5
Shrd Hash Brn	NA	6809	NA	NA	96/3oz.
Tater Nuggets	NA	6810	NA	NA	6/5

* High yield thin cuts and shoestring solids plus or minus 1 percent.

Buying Group: KRAFT - 4 Star (Black Label) Grade A is printed on the carton. Solids are plus or minus 2 percent.

Crinkle Cut	30	NR	1/2	Long	6/5
Crinkle Cut	32	NR	5/16	Long	6/5
Straight Cut	30	6816	3/8	Long	6/5
Straight Cut	30	6817	5/16	Long	6/5
Shoestring	30	6818	1/4	Long	6/4-1/2
Steak Cuts	30	6819	3/8 x 13/16	Long	6/5

Buying Group: KRAFT - 3 Star (Red Label) Grade A is printed on the carton. Solids are plus or minus 2 percent.

Crinkle Cut	30	6813	1/2	Line Flow	6/5
Crinkle Cut	30	NR	5/16	Line Flow	6/5
Straight Cut	30	6820	3/8	Line Flow	6/5
Straight Cut	30	6821	5/16	Line low	6/5
Shoestring	30	6822	1/4	Line Flow	6/4-1/2
Steak Cuts	30	6823	3/8 x 13/16	Line Flow	6/5

Buying Group: KRAFT - 3 Star (Green Label - Economy) and 2 Star Grade B but Grade is not printed on the carton. Length of 3 Star is line flow and 2 Star is short. Codes and solids not reported.

Note: According to Kraft, two color printing on the case (blue and white on brown or white case) indicates that product was packed in the Northwest and three color printing (red, white and blue on a white case) indicates that the product was packed in the Midwest.

E. French Fry Strips, Formed and Skin-Cut Products for Deep Fat Frying Offered by Major Buying Groups

Product	Percent Solids	Code	Size	Length	Pack/Size
<u>Buying Group</u> Nifda, Inc. - Prime Fries (Northwest) Idaho products carry an Idaho shield. Grade A is printed on the carton.					
Crinkle Cut	32	05000	1/2	ExLong	6/5
Crinkle Cut	32	05005	3/8	ExLong	6/5
Thin Crinkle Cut	34	05010	5/16	ExLong	6/5
Thin Crinkle Cut	34	05011	5/16	ExLong	6/4-1/2
Straight Cut	32	05015	3/8	ExLong	6/5
Straight Cut	34	05020	5/16	ExLong	6/5
Shoestring	36	05025	1/4	ExLong	6/4-1/2
Club (Steak) Fries	31	05030	3/4	ExLong	6/5
Cottage Fries	NA	05500	NA	NA	6/5
IQF Hash Browns	NA	05510	NA	NA	96/3 oz.
Scored HB Tray Pk	NA	05513	NA	NA	3/5
Scored HB Tray PK	NA	05514	NA	NA	8/2-1/4
Taters	NA	05520	NA	NA	6/5

Buying Group Nifda, Inc. - Royal Fries Grade A is printed on the carton.

Crinkle Cut	32	05100	1/2	ExLong	6/5
Crinkle Cut	32	05105	3/8	ExLong	6/5
Thin Crinkle Cut	34	05110	5/16	ExLong	6/5
Straight Cut	32	05115	3/8	ExLong	6/5
Straight Cut	34	05120	5/16	ExLong	6/5
Shoestring	36	05125	1/4	ExLong	6/4-1/2
Club (Steak) Fries	31	05130	3/4	ExLong	6/5
IQF Hash Browns	NA	05511	NA	NA	96/3 oz.
Taters	NA	05521	NA	NA	6/5
Taters w/Vit C	NA	05523	NA	NA	10/3
Taters w/Vit C	NA	05524	NA	NA	6/5

Buying Group Nifda, Inc. - Mighty Fries Grade A is printed on the carton.

Crinkle Cut	30	05200	1/2	Long	6/5
Crinkle Cut	30	05205	3/8	Long	6/5
Thin Crinkle Cut	32	05210	5/16	Long	6/5
Thin Crinkle Cut	32	05211	5/16	Long	6/4-1/2
Straight Cut	30	05215	3/8	Long	6/5
Straight Cut	32	05220	5/16	Long	6/5
Shoestring	34	05225	1/4	Long	6/4-1/2
Club (Steak) Fries	31	05230	3/4	Long	6/5
Cottage Fries	NA	05504	NA	NA	6/5
Diced Hash Browns	NA	05517	NA	NA	6/5
Puffs	NA	05522	NA	NA	6/5

E. French Fry Strips, Formed and Skin-Cut Products for Deep Fat Frying Offered by Major Buying Groups

Product	Percent Solids	Code	Size	Length	Pack/Size
<u>Buying Group</u> Nifda, Inc. - Dandy Brand Grade A is printed on the carton.					
Crinkle Cut	30	05300	1/2	Line Flow	6/5
Crinkle Cut	30	05305	3/8	Line Flow	6/5
Thin Crinkle Cut	32	05310	5/16	Line Flow	6/5
Thin Crinkle Cut	32	05311	5/16	Line Flow	6/4-1/2
Straight Cut	30	05315	3/8	Line Flow	6/5
Straight Cut	32	05320	5/16	Line Flow	6/5
Shoestring	34	05325	1/4	Line Flow	6/4-1/2
Club (Steak) Fries	31	05330	3/4	Line Flow	6/5
Tater Rounds	NA	05532	NA	NA	6/5

Buying Group NUGGET - Color Code Gold Label Grade A is printed on the carton.

Shoestring	32	0205	1/4	ExLong	6/4-1/2
Shoestring AVD	34	0207	1/4	ExLong	6/6
Shoestring Hi-Yield	35	0215	1/4	ExLong	6/4-1/2
Straight Cut	30	0285	3/8	ExLong	6/5
Steak Fry	28	0680	NR	ExLong	6/5

Buying Group NUGGET - Code Black Label Grade A is printed on the carton.

Crinkle Cut	32	0184	5/16	Long	6/4
Crinkle Cut	32	0540	5/16	Long	6/5
Crinkle Deep Cut	30	0182	3/8	Long	6/4
Crinkle Cut	30	0480	1/2	Long	6/5
Shoestring	32	0188	1/4	Long	6/4
Straight Cut	32	0186	5/16	Long	6/4
Straight Cut	32	0320	5/16	Long	6/5
Straight Cut	30	0240	3/8	Long	6/5
Steak Fry	28	0640	3/4	Long	6/5

Buying Group NUGGET - Color Code Brown Label Grade A is printed on carton.

Crinkle Cut	32	0570	5/16	Line Flow	6/5
Crinkle Cut	32	0747	5/16	Line Flow	6/5
Crinkle Cut	30	0440	3/8	Line Flow	6/5
Crinkle Cut	30	0740	3/8	Line Flow	6/5
Crinkle Cut	30	0520	1/2	Line Flow	6/5
Shoestring	32	0630	1/4	Line Flow	6/5
Shoestring	32	0220	1/4	Line Flow	6/4-1/2
Straight Cut	32	0744	5/16	Line Flow	6/5
Straight Cut	32	0360	5/16	Line Flow	6/5
Straight Cut	30	02840	3/8	Line Flow	6/5
Straight Cut	30	0730	3/8	Line Flow	6/5
Steak Fry	28	0670	3/4	Line Flow	6/5
Steak Fry	28	0700	3/4	Line Flow	6/5

E. French Fry Strips, Formed and Skin-Cut Products for Deep Fat Frying Offered by Major Buying Groups

Product	Percent Solids	Code	Size	Length	Pack/Size
<u>Buying Group</u> PYA/MONARCH - Blue Brand (Northwest) Also available in Red Brand (Long) and Green Brand (Line Flow) but codes not reported.					

Crinkle Cut	30	MA1	1/2	ExLong	6/5
Crinkle Cut	32	MA3	5/16	ExLong	6/5
Straight Cut	30	MA4	3/8	ExLong	6/5
Straight Cut	32	MA5	5/16	ExLong	6/5
Steak Cut	28	MA7	NR	ExLong	6/5
Shoestring	32	MA6	1/4	ExLong	6/4-1/2

Buying Group PYA-MONARCH - Blue Brand (Midwest) Grade A is printed on carton.

Crinkle Cut	30	MA13	1/2	ExLong	6/5
Crinkle Cut	32	MA33	5/16	ExLong	6/5
Straight Cut	30	MA43	3/8	ExLong	6/5
Straight Cut	32	MA53	5/16	ExLong	6/5
Steak Cut	28	MA73	3/4	ExLong	6/5
Shoestring	32	MA63	1/4	ExLong	6/4-1/2

See Appendix D for addresses of major buying groups.

VII GROWING AND PROCESSING POTATOES

VII GROWING AND PROCESSING POTATOES

Many aspects of growing and processing potatoes have a direct impact on the quality and condition of French fries delivered to food service kitchens. Growing areas influence the solid content of potatoes; growing and harvesting methods affect product damage and quality; storing of potatoes prior to processing influences the quality content of the finished fries; and the care exercised in processing, particularly with respect to blanching and parfrying can directly influence the patron acceptance of the end product.

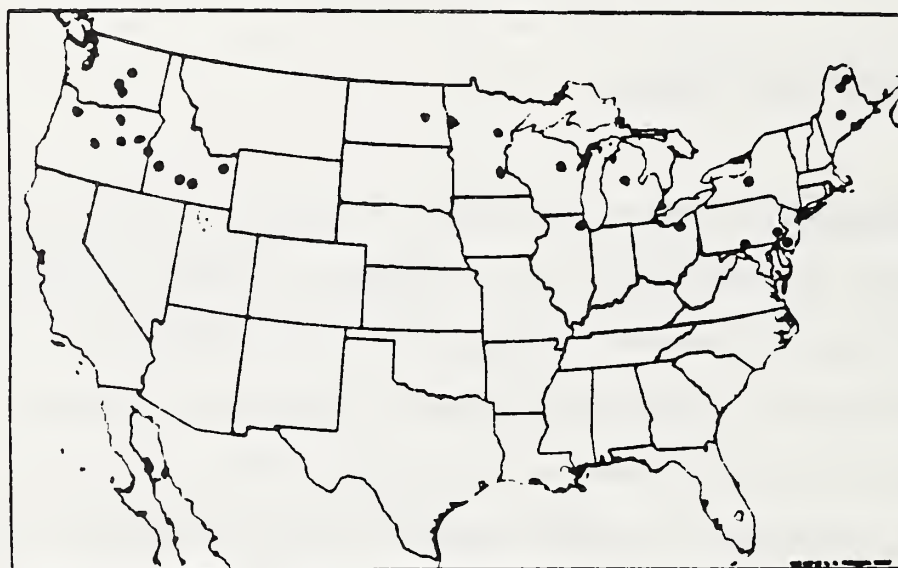
GROWING AND STORING

Growing Areas: Growing areas may have a significant impact on the quality of potatoes due predominantly to the influence of regions on French fry solids. Researchers are constantly studying the factors affecting the accumulation of solids (starch) in potatoes to isolate the constant and variable factors. Some factors are beyond the control of the grower, such as air and soil temperature, quality and amount of sunlight, length of growing season and rainfall. Factors which can be controlled include crop rotation, amount and type of fertilizer, amount of irrigation, planting dates, variety, plant spacing, weed and insect control.

The uncontrollable factors seem to be less a factor in the Pacific Northwest where the volcanic-loam, arid soil and temperature is near perfect for potato production. These and the long growing season, the moisture and application of nutrients through irrigation make for high quality and high yields.

Accordingly, the solids content of French fries is usually highest in potatoes grown in Idaho, Washington, and Oregon where moisture is controlled by irrigation. In normal years, solids content decreases slightly as the production moves to the Midwest and the East, where rainfall is the controlling factor for moisture. Approximately 78 percent of French fries produced in the U.S. are produced and processed in the Pacific Northwest, although Maine and the Midwest grow potatoes which yield high solids content. Figure 3 illustrates the location of producers of frozen French fried potato products in the U.S.

Figure 3. LOCATION OF PRODUCERS OF FROZEN POTATO PRODUCTS



Production regions are not only important from the standpoint of having high yields of quality potatoes, but also from the standpoint of shipping finished products. For this reason, French fries produced in the Midwest or Maine may have decided price advantages when they are marketed in the Midwest or Northeast because of lower transportation costs. See page 54.

Thus, a food service buyer might find it advantageous budget-wise, to purchase potatoes produced nearby. This would be more important to food service operators who are faced with rather fixed food costs. On the other hand, some

commercial establishments might be in a position to pass along higher food costs to patrons.

Growing and Harvesting: The production and marketing of French fries is a high volume competitive business which centers around processors. In order for processors to flourish and prosper, they must produce and market diversified lines of products of acceptable qualities which are offered to the user trades at competitive prices. Moreover, high volume production must be accomplished with a minimum of product waste, shrink, spoilage and rejection.

To be competitive in this manner, processors normally control their sources of supplies to the extent that they may provide planting stock and technical assistance to growers during the growing and harvesting seasons. Processors may contract for crops with growers and these contracts may include such factors as size, sugar content, dark ends, the amount of debris, etc.

The first step in marketing an acceptable product, therefore, is to grow, harvest and deliver to a processing plant, potatoes which produce a high quality product with the minimum of waste and rejection.

Planting. Planting begins early in the spring when the snows have melted, the ground thawed, and the soil plowed and worked to the right texture. Only quality seed-stock that has been greenhouse tested and certified to be disease-free, should be used. The planting stock potatoes are cut into pieces, making certain that each piece has at least one eye that will sprout and become a potato plant. Modern machines plant and cover the stock, two to four rows at a time.

Irrigating. In the Pacific Northwest, water for the crop is supplied through irrigation, while the Midwest and the Northeast depend solely on rainfall. In irrigation, water is applied according to exact needs determined by constant testing. The most common type of irrigation technique is the overhead center-pivot circular sprinkler system. These sprinklers are assembled in motorized sections, traveling in giant circles covering about 130 acres of a 160 acre square field. "Rill irrigation" is still used on a few farms. This method uses syphon tubes to transfer water from small irrigation feeder canals to the furrows between crop rows. Another system is overhead and motorized, but instead of swiveling around a center pivot, it waters the full width of the field as it slowly travels the length, then it shuts off.

Temperature. The potato plant does best under temperature conditions of warm days, 80°-85°F, and cool nights. Night temperatures of 50°-55°F are desirable for translocating starch formed in leaves down into tubers. These conditions exist in the northern part of the United States.

Harvesting. Approximately 120 days after planting, the potatoes are ready for harvest. The heavy foliage above ground is knocked down either by a timely frost, a mechanical beater or chemical spray to ensure that the potatoes underground will mature properly to the peak of quality. Then, mechanical harvesters gently lift the potatoes out of the hills, shake away clumps of dirt and deposit the tubers on rubber-covered conveyors that take them to waiting trucks.

Fresh Market Potatoes*

Immediately after digging, potatoes destined for fresh market are trucked either to an environment-controlled storage building on the farm or sold to a nearby potato shipper where they are held for a month at 50°F. This "cooling-off" period serves to heal bruises, remove field heat and keeps rot development to a minimum. The potatoes are then further cooled to 42°-45°F, after which they are washed with jets of clean cool water to remove the soil and sorted by size. Rubber conveyors carry the potatoes past graders who remove any misshapen, broken and cut potatoes. After grading, they are packed into bags or boxes. The most popular packages in the food service industry are the 100 count, 90 count, 80 count and 70 count boxes. Each box weighs 50 pounds. See Figure 4.

Figure 4 - What's in a 50-lb. Box of Fresh Potatoes**

<div> <div>■</div> most potatoes in the box </div> <div> <div>▣</div> maximum size range </div>	6 oz.	7 oz.	8 oz.	9 oz.	10 oz.	11 oz.	12 oz.	13 oz.	14 oz.	15 oz.	16 oz.
100 Count Box Contains between 95 and 105 potatoes.	▣	■	■	■	▣	▣					
90 Count Box Contains between 86 and 95 potatoes.		▣	■	■	■	▣	▣				
80 Count Box Contains between 76 and 84 potatoes.			▣	■	■	■	▣	▣			
70 Count Box Contains between 67 and 74 potatoes.				▣	■	■	■	▣	▣		

* This section is included for those food service operators who may want to purchase fresh potatoes and produce their own French fries, in house.

** Courtesy Idaho Potato Commission

Food service operators may purchase fresh potatoes which have been peeled and made stove-ready by packers or local distributors. These are available whole, sliced or diced ready for cooking and serving as boiled potatoes or for preparing potato salad or mashed potatoes.

Storage for Processing: Even the best potato storage facility cannot compensate for poor quality potatoes placed in it. Care must be taken to evaluate potatoes before they go into storage. Indiscriminate mixing of lots will generally lead to storage problems.

When potatoes contracted to processors are harvested, they are placed in storage to be used as needed. Since most of the potatoes grown for French fries are harvested over the span of a few months each fall, they must be cleaned and stored for year-round processing. In order to maintain quality from field to table throughout the year, emphasis is placed on optimal storage conditions. See Figure 5.

Failure to store potatoes in the proper environment not only hastens deterioration but results in starch conversion to sugar. This causes off flavor fries. When fried, the heat causes these sugars to react with the amino acids (the building blocks of protein) and develop black or brown areas, spots or streaks or may just produce a dark fry. This is called the "Maillard reaction". Pressure bruises and decay will also result from improper storage. The Environmental Protection Agency (EPA) authorizes the use of certain chemicals to inhibit sprouts on potatoes. Temperature, air circulation and light must be controlled to obtain optimal storage.

Figure 5 - Illustration of Potato Harvesting and Storage

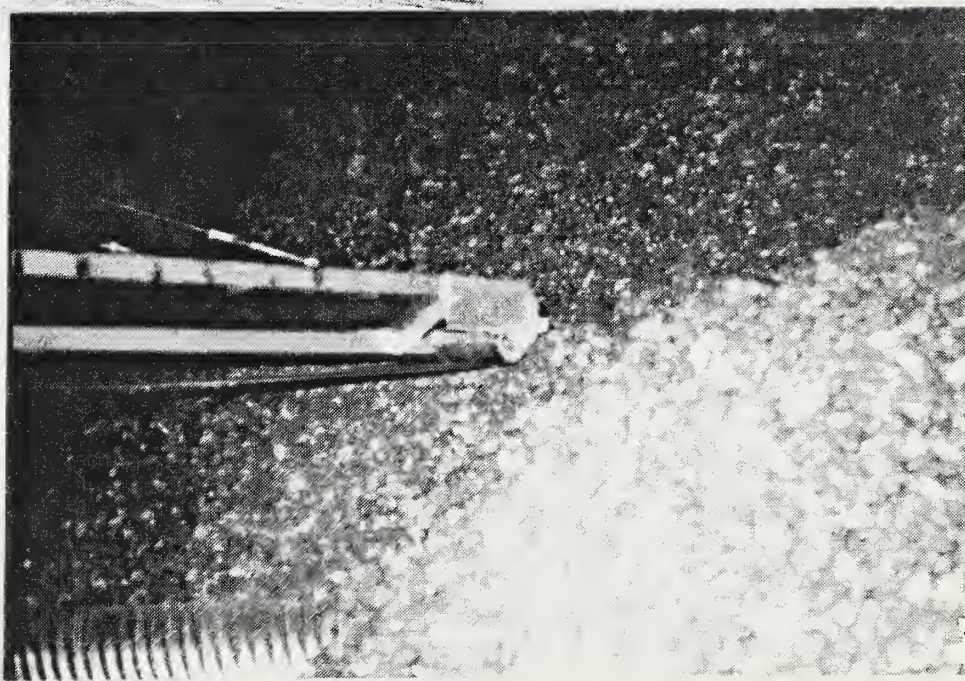
Harvesting the crop.



Potatoes arriving at storage facility.



Interior of a storage facility.



Temperature. After harvesting, potatoes should be cooled to approximately 50°F. and this temperature should be maintained for at least a month. This is done to remove field heat, heal bruises and keep rot development to a minimum.

If potatoes are to be processed into French fries, they should be cooled further and stored at 45°-47°F. Lower temperatures can cause the starch in potatoes to convert to sugar. This causes the product to cook dark which affects the appearance and flavor of French fries. Relative humidity of ventilation air should be 95 percent or higher. This humidity level promotes healing of wounds and reduces weight loss.

Air Circulation. Constant cooling by humid, moving air avoids partial dehydration which can cause potatoes to shrivel, lose weight and soften. High pressure fans, with large capacity humidifiers, combine with good air distribution to give even temperature throughout the storage pile.

Light. Storage facilities are dark to keep potatoes from turning green and developing a bitter taste.

The processor's field men constantly monitor the condition of the potatoes, checking each warehouse at least once and often twice each day. Throughout the storage period, samples are drawn from each storage location. The samples are checked for size, specific gravity, sugar-starch ratio, and other factors important to quality. The lots best for each week's processing schedule are released for processing and delivered to the plant.

PROCESSING

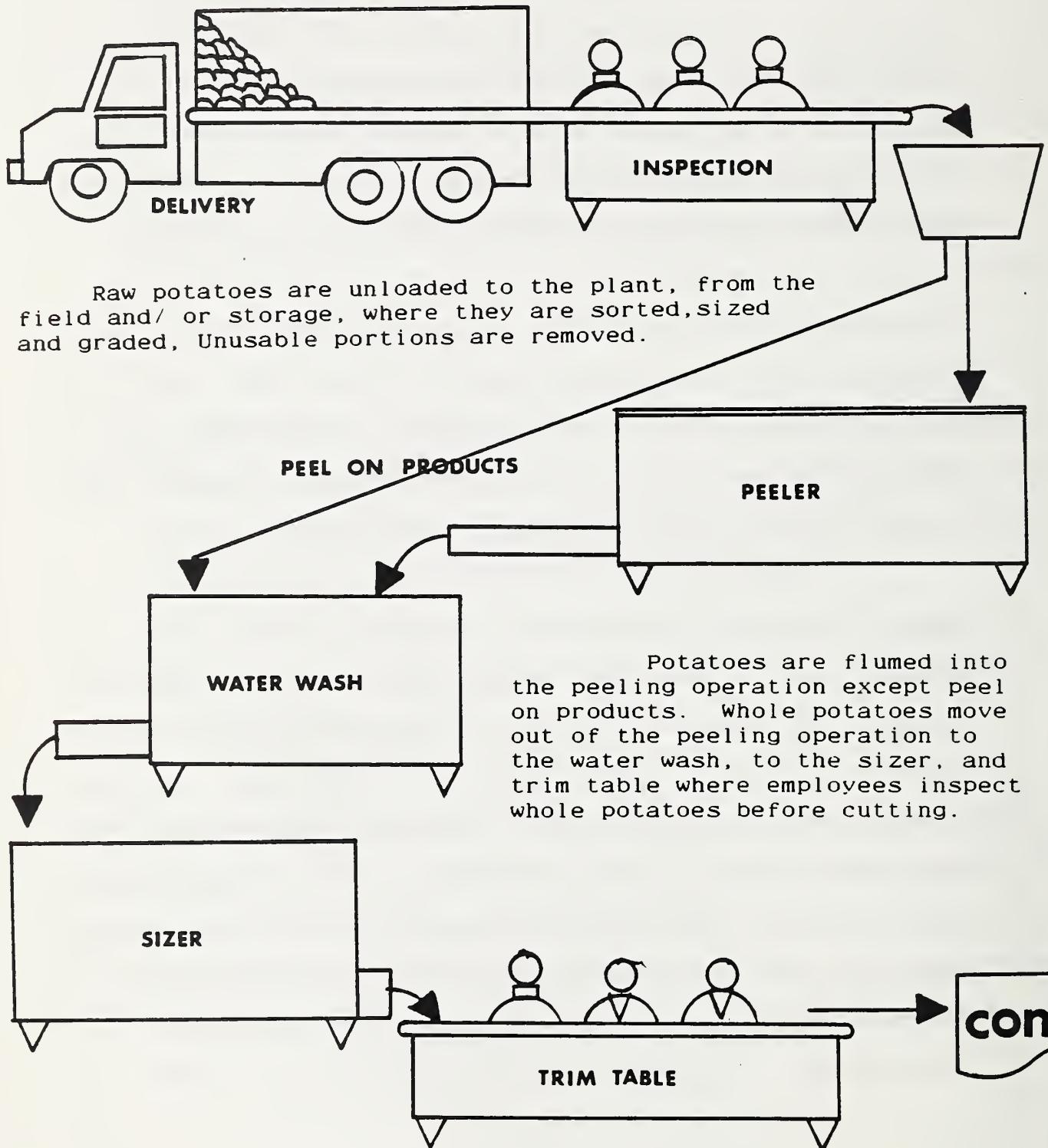
A French fried potato processing plant usually consists of two types of processing lines: (A) one or more strip lines and a (B) "preform" line - one in which small pieces and slivers from the strip line are made to the size and shape desired through the use of a forming machine. See the following charts. The strip line will run one style of French fry for a day, a week, or longer to satisfy inventory requirements, then switch to another style and/or length.

The preformed (formed) line utilizes the rejects from the strip line as well as potatoes too small to meet the requirements of the strip line. Products are made from seasoned, chopped or shredded potatoes, with or without Vitamin C added, formed to make such items as hash browns, rounds, roundabouts, gems, tots, logs, medallions, spud bites, triangles or other variations.

Sorting. When potatoes are removed from storage, they are taken directly to a processing plant. There, after washing, plant technicians make quality evaluations and inspectors size-grade the potatoes. Quality evaluations include such factors as specific gravity (for solids), sugar content and conducting actual lab frying tests. From these tests, they can make adjustments in the line to allow for variables. After washing, inspectors remove rocks, other foreign material and damaged or rotten product. Potatoes destined for French fries are sorted and placed in receiving bays to enter the production line, for processing either as extra long, long, line flow, short, or the preformed line.

PRODUCTION METHOD: A

French Fries



METHOD A CONTINUED

CUTTER

INSPECTION

After cutting, inspection, blanching, and drying, the product passes thru a two stage fryer. After frying the de-fatter removes excess oil and keeps the strips separated.

BLANCHING

COOLING
WATER

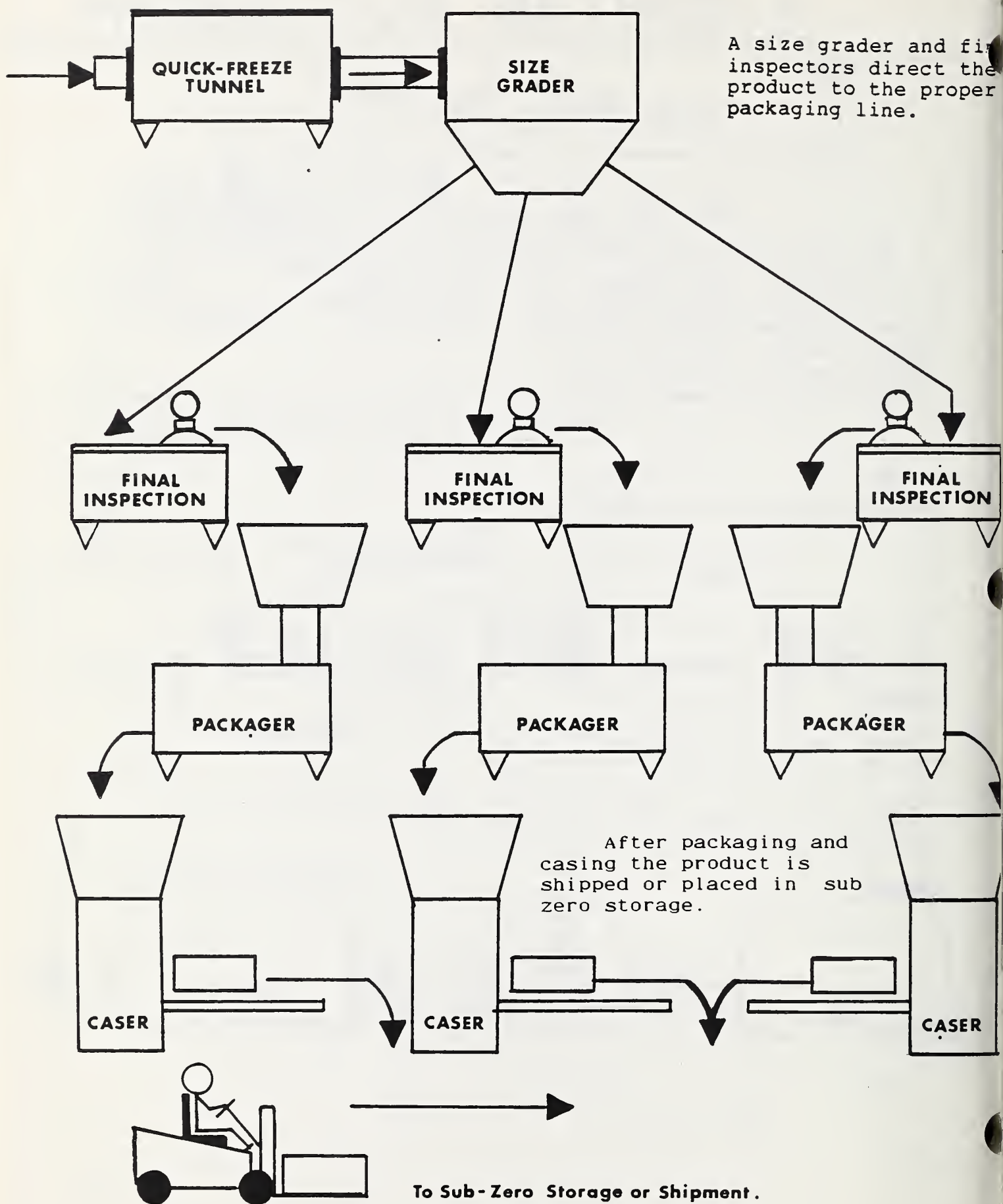
BLANCHING

DRYER

2
STAGE
FRYER

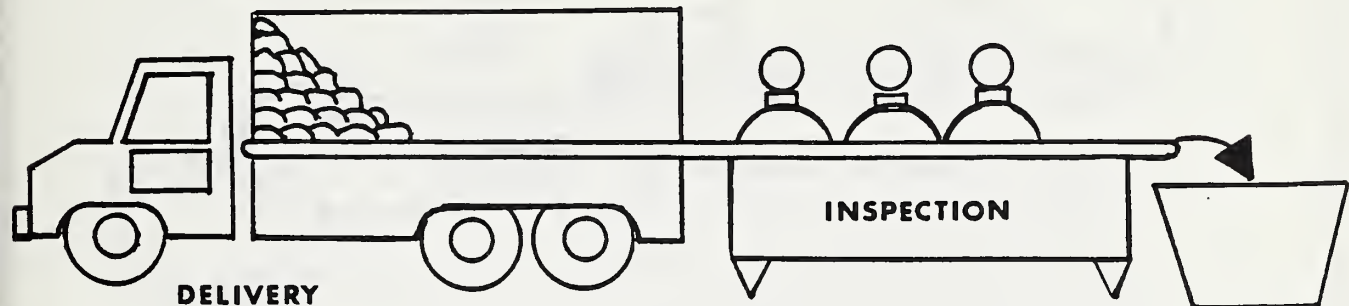
DEFATTER

METHOD A CONTINUED

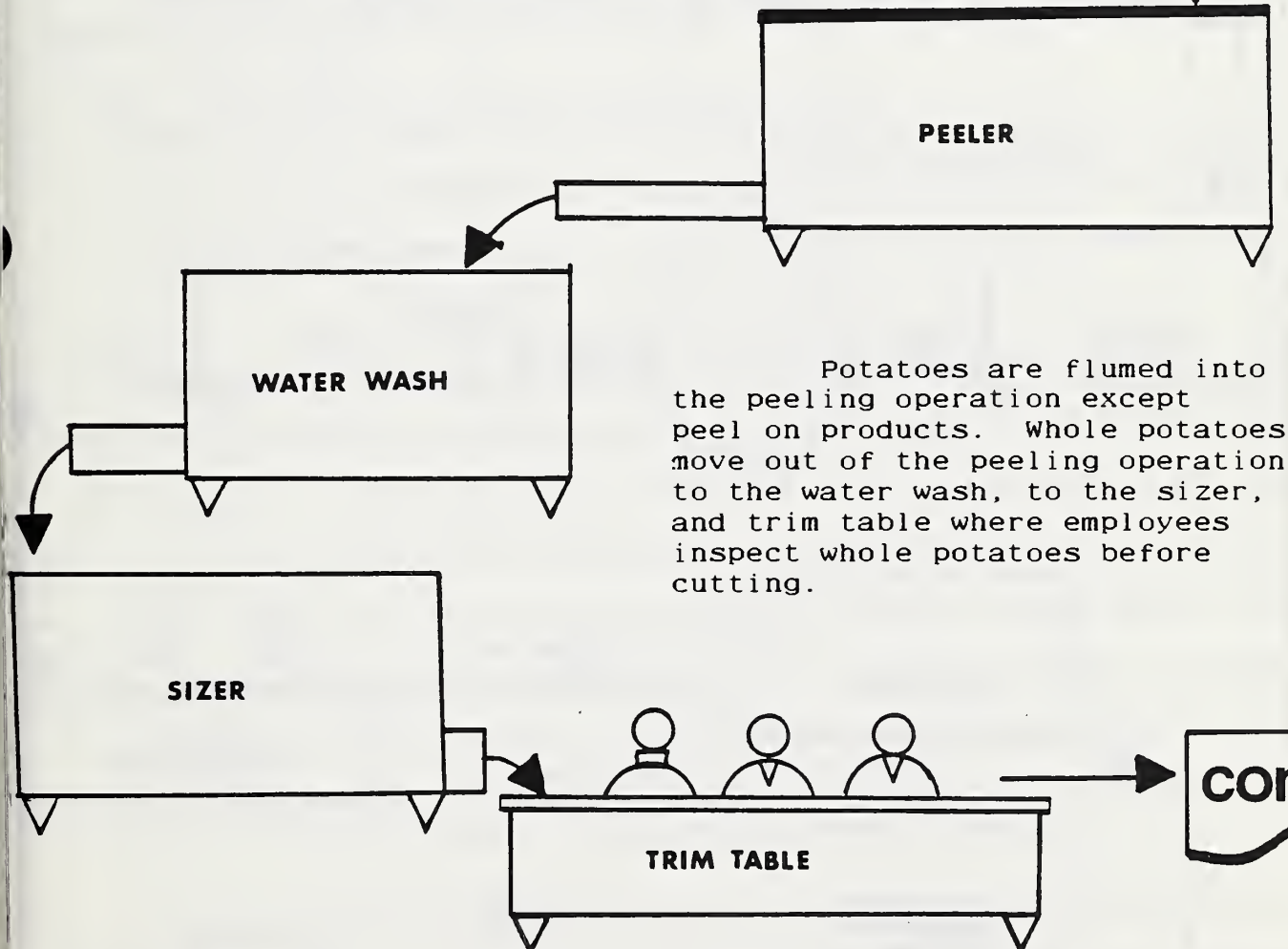


PRODUCTION METHOD: B

Taters & Triangles



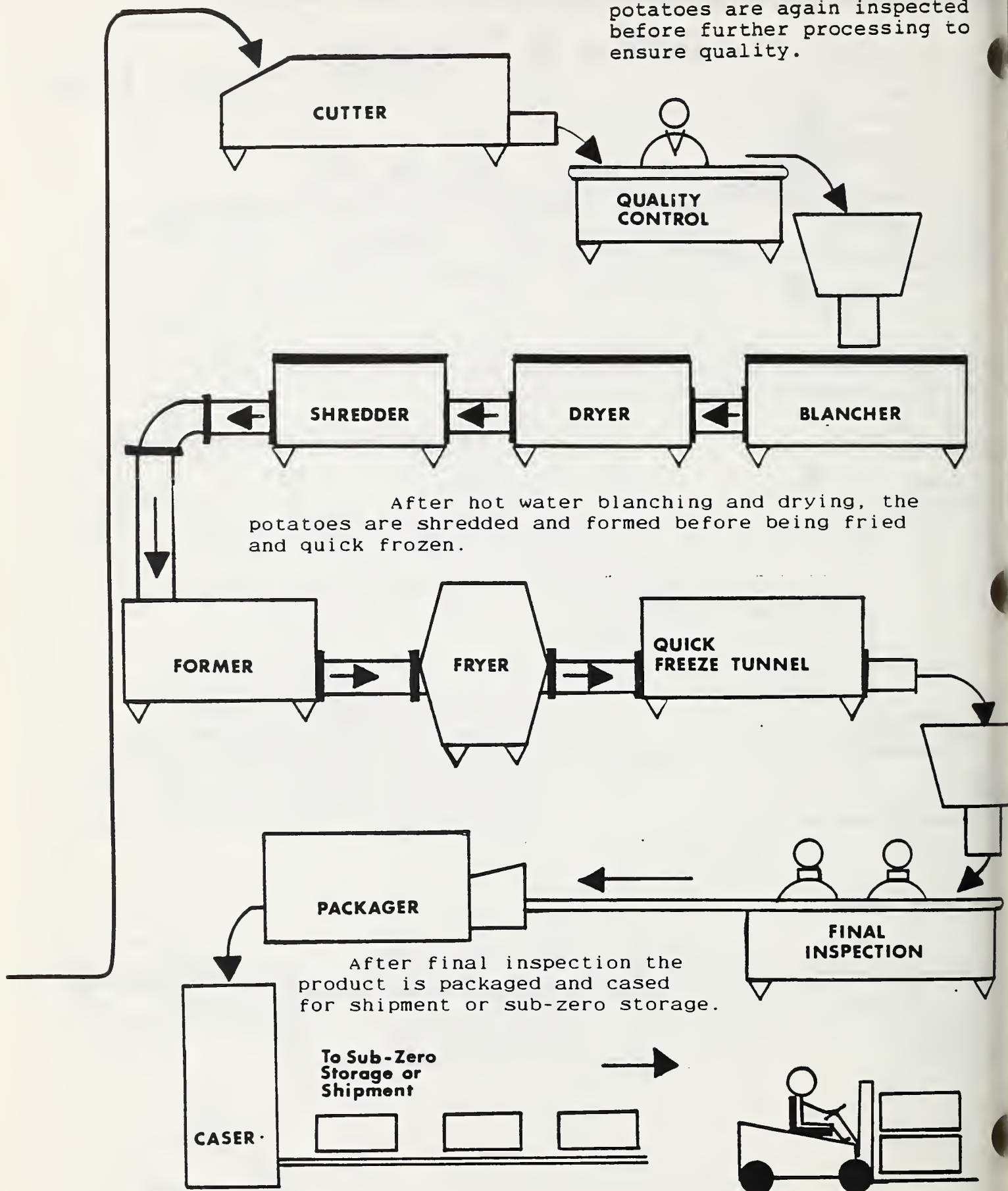
Raw potatoes are unloaded to the plant, from the field and/ or storage, where they are sorted, sized, and graded. Unusable portions are removed.



Potatoes are flumed into the peeling operation except peel on products. Whole potatoes move out of the peeling operation to the water wash, to the sizer, and trim table where employees inspect whole potatoes before cutting.

METHOD B CONTINUED

After the cutter operation potatoes are again inspected before further processing to ensure quality.



The sorting is done to classify those potatoes which will produce strips of various lengths:

Extra long	- 80% or more 2" in length or longer - 30% or more 3" in length or longer
Long	- 70% or more 2" in length or longer - 15% or more 3" in length or longer
Medium	- 50% or more 2" in length or longer
Short	- Less than 50% 2" in length or longer

Note from the table above that each length allows for a blend of sizes. Even the extra longs may contain up to 20 percent strips that are less than two inches in length.

Small potatoes and rejects from the strip line are directed to the preformed line to make hash browns or other further processed products.

Peeling. Potatoes may, or may not be peeled, before cutting, depending upon the particular type being processed. The peeling machines may be steam, lye, abrasive or roller type peelers. The steam and lye peelers give a quick cook which loosens the skin or peel but does not penetrate deeply into the potatoes. The peelings are then removed by passing the potatoes through rubber rollers and water sprays. In abrasive, roller type peelers, the peel is removed without the addition of heat. The potatoes are again inspected to remove spots or diseased sections.

Cutting. In the process of machine cutting potatoes for French fries into strips, there is always a certain amount of slivers and otherwise irregular-shaped pieces. A certain number of these pieces are expected and are

allowed for in the tolerances contained in the standards. It is usually necessary, however, to pass the cut potatoes over some type of shaker screen to remove a portion of the small pieces and slivers. Inspectors are ever present to remove strips that the mechanical sort misses. Processors do not like to remove any more slivers and pieces than they have to because of the loss in yield. However, most processors utilize this material by diverting them to the preformed line for use as patties, puffs, shreds, or diced. Some very short pieces could very well pass the inspection for short cuts. Processors who have a good market for preformed products find that there is less tendency to keep this material in the frozen French fry pack.

Blanching. French fry strips must be blanched (partially cooked) in hot water or steam at processing plants to stabilize the potato enzymes and starches and make it more feasible to convert the product into a suitable frozen state. The blanching process is important from a quality standpoint because it can influence the texture and color of the final product. Blanching times and temperatures are often changed to adapt to the condition and solids of the potatoes being processed.

Blanching serves to: (1) produce a more uniform color of the fried product; (2) reduce fat absorption by gelatinizing the surface layer of starch; (3) reduce frying time; and (4) improve texture of the fried product. The leaching of sugars during the blanching process results in a lighter, more uniform color French fry.

Blanching is probably the most important step in the production of French fries. It is in this step that most of the variation or secret processes occur. Some processors may use two or more blanches with the product cooled between each blanch. The length of time in the blanch determines the amount of sugar that is leached out of the product.

Oven fries are blanched longer than fries produced for deep fat cooking and they are normally blanched in a dilute dextrose (a simple sugar) solution to give an even color or a caramelized appearance after cooking. Other additives may also be used to improve texture or to prevent darkening after cooking.

Some products, particularly shoestrings and thin cuts which have been cut by "water knives" and steam blanched may go through a special drying process to remove some of the moisture prior to steam blanching. This process was developed for the carry-out industry to give the outside a more chewy texture which holds up longer when bagged.

Frying. Following the blanching and drying processes the strips are partially cooked (parfried) in deep fat. They are conveyed through cooking oil at a uniform rate from one end of a cook-tank to the other. Frying may be done in one or two fryers, using either a single or two-stage system. A double-fry process with cooling between each fry, tends to minimize the absorption of oil and improve the flavor of the strips. Fry temperatures range from 350° to 375°F. The amount of frying required depends on the process. Some processors may cut costs on certain labels by frying minimally to save fat, thus leaving more water in the French fry which "improves" the weight. At the maximum, this could amount to approximately two extra pounds (of water) to the case which must be cooked out at the food service establishment. This means less yield, more fat

used, and more of a chance of either over- or under-cooking the fries at food prep kitchens.

Quality control people check the color of the fries as they leave the fryer, both for overall color and for uniformity of color and recommend suitable adjustments of the process. These recommendations may be based on experience or on actual color plates or models which are provided as guides for the operators. USDA color standards may be used for this purpose.

Cooking Oils. The quality of French fries also depends on the type of cooking oil used and the amount of solids in the potatoes. Processors may use either vegetable or animal oil or a combination of the two. Frying oils used in processing plants are manufactured specifically for this purpose and may vary somewhat in "quality" and price. Although vegetable oils are lower in cholesterol, some people think that animal oils impart a better flavor.

The amount of solids in French fries has an influence on frying oil because of the moisture which is drawn from potatoes into the oil. Potatoes with high solids lose less water than potatoes with low solids (and high moisture).

Frying oils have to be filtered continuously in order to remove solids, impurities and moisture. The extent to which this process is pursued also has an affect on the quality of the finished products.

Defatting & Cooling. Immediately after coming from the fryer, heat may be applied to drive off excess surface oil. In many plants the potatoes are cooled quickly after the fry by a blast of hot air designed to blow off the outer oil which clings to the hot potatoes. Some plants use a conveyor shaker or a vibrating screen to help drain off the oil. The shaker method may be used instead of or in addition to the blow-dry method. After the product is defatted and cooled it is conveyed on a wire mesh belt at room temperature.

Freezing. Following another inspection, the strips are frozen prior to packaging, in air blast tunnels so that the product is individually quick frozen (IQF) at an air temperature equivalent to minus 60°F. which freezes the strips in less than 10 minutes.

As the frozen strips leave the freezing tunnel, they pass through a series of large vibrating stainless steel screens which removes most of the remaining shorter pieces. It is during this stage that the product is sized to specific length designations and sent to the proper packaging lines. The longer pieces are packed for the food service trades. The smaller cuts are further screened and channeled either to retail packaging lines or further processing lines.

Packaging, sampling, storing and shipping: Packaging is usually accomplished by automatic machinery which places the proper amount of French fries into baskets which slide them gently into bags (Pillo Pak). The bags are sealed, then packed six to the case. Although "regular" sizes are packed six 5-lb. bags to the carton, shoestrings are usually packed six 4 1/2-lb. packages to the same standard cartons. Since shoestrings and other thin cuts are fluffy and require more air space in the bag, the packs are lighter. During the packaging

process samples are drawn for conducting quality control tests on each batch. Samples are fried, checked for size and graded.

For internal control purposes, each batch of potatoes processed is assigned a production code number (not related to product code number). This number denotes the plant, the date, the line, and shift that the product was packed. This control number is printed on the carton and is used to follow the product through marketing channels.

After the wholesale cartons are palletized, they are stacked in a holding freezer for staging before they are loaded onto trucks or railcars and shipped to distributor warehouses.

Oven Fries: Oven fries are used by schools and other establishments which either do not have deep fat frying equipment or find it necessary to batch cook fairly large quantities in a short time frame. The processing procedures for oven fries differ from deep fat fries in several ways:

- (a) More moisture is removed from the product prior to blanching,
- (b) Oven fries are blanched longer,
- (c) A dextrose solution is added to the blanch water. The dextrose coating allows oven fries to cook evenly. Many fries (but not all) that are processed for oven cooking should not be cooked in deep fat or the potatoes may turn dark.
- (d) The product is allowed to take up more oil, thus giving an end product equivalent to the oil fried product.

Some processors have developed a "low moisture" product designed especially for oven frying. These include a crinkle cut with deeper V-cuts to increase the exposed surface which promotes outside crispness and holding ability. Formed potato products are also made for oven cooking. These items are prepared from chopped or shredded potatoes, and seasoned and shaped into rectangular, triangular and round pieces. Formed products can add variety to a menu and give greater portion control. Formed products hold well in ovens.

GLOSSARY OF TERMS

GLOSSARY OF TERMS

ANIMAL OIL or SHORTENING The animal oil used in par-frying French fries is preferred by many who believe it imparts a more desirable flavor.

BAG French fried potatoes are packed in bags, usually six bags to a case.

Many food service operators serve French fries in grease-proof bags similar to fast food restaurants. Common sizes available from local paper distributors are the following: 4-1/2 inches wide by 3-1/2 inches, 4-7/8 by 4 inches and 4-3/4 by 3-3/4 inches. They are available plain or printed.

BLANCHING Potatoes are cooked for a few seconds in hot water or steam. The blanch may contain a dextrose solution to give the product an even golden brown color when refried. The solution may also contain a preservative to maintain a bright appearance. Blanching deactivates the enzyme systems that cause discoloration. In addition, blanching improves the texture of the fries and removes excess natural sugars which may cause an uneven refried appearance.

BHA (Butylated Hydroxyanisole) A chemical used as an antioxidant.

BHT (Butylated Hydroxytoluene) A chemical used as an antioxidant.

BULKING PERIOD Growing period during which the potato increases in size.

CHEMICAL COMPOSITION The chemical makeup of a product consisting of protein, fat, carbohydrates and various vitamins and minerals. Other additives may also be listed, such as preservatives, thickeners or stabilizers.

CONVECTION OVEN An oven in which the heat is transferred in a circulatory motion. If used in the preparation of French fries, the door should be opened slightly to aid in venting so that the fries will not become soggy.

DEEP FRY To cook by immersion in oil.

DEHYDRATED POTATOES Potatoes with most of the moisture (92-95%) removed. May be obtained in the form of powder, granule, or flake with or without vitamin C added and in various cuts such as slices or dices.

DEXTROSE A simple corn sugar used in processing to stabilize the sugar content. It may be used in the blanching process for oven fries to give an even golden color.

ENVIRONMENTAL CONTROL An area in which the temperature and humidity (or atmosphere) are controlled.

EPA Environmental Protection Agency A government agency charged with protecting the environment from harmful agents.

FUMIGANTS Materials or chemicals in the form of smoke, vapor or gas used to control or destroy weeds, pests or nematodes in the soil.

GRANULES Dehydrated potatoes broken down into single cells to form a powder.

MAILLARD REACTION This is a chemical reaction of amino acids (building blocks of protein) and reducing sugars in potatoes which upon heating causes dark off-flavor fries.

MEALY A mealy potato has a high solids content with a texture similar to a good baked potato. A mealy potato has a tendency to break apart when boiled.

NEMATODES Elongated cylindrical worms, parasitic in animals or plants or free-living in soil or water, that cause serious damage in agricultural regions.

NUTRITION INFORMATION Typical of 3/8 inch crinkle cut French Fries is the following:

Serving Size (strips)	10	Phosphorus (mg)	56
Calories	140	Iron (mg)	1.8
Protein (gram)	3.6	Potassium (mg)	427
Fat (gram)	8.4	Vitamin A (Intl units)	Trace
Carbohydrates (gram)	33.7	Vitamin C (mg)	21
Sodium (mg/100 gram)	25	Thiamin (mg)	.14
Sodium (mg/serving)	15	Riboflavin (mg)	.08
Calcium (mg)	9	Niacin (mg)	2.6

PACKER A manufacturer of French fries. Also called a "processor".

PARFRIED Partially fried at the processing plant.

PHOTOSYNTHESIS The process by which chlorophyll-containing cells in green plants convert incident light into energy and synthesize carbohydrates from carbon dioxide and water.

PREFORMED Shredded potatoes are pressed into a mold to form various shapes and sizes prior to cooking.

PROCESSOR A manufacturer of French Fries, also called a "packer".

SEED PIECES Seed potato cut into pieces with "eyes" for planting.

SHIPPER One who packs for the fresh market. Shippers may store, clean, size, grade and pack potatoes into boxes, bags or sacks.

SODIUM BISULFITE A chemical used to preserve color and flavor.

SOLIDS Refers to the amount of dry matter or starch present in the potato. In the raw state, solids are measured by specific gravity. After parfrying, solids may be determined by the convection oven method. High solids content usually means a mealy texture similar to a baked potato.

SPECIFIC GRAVITY The ratio of mass of a solid (potato) to the mass of an equal volume of distilled water at 4 degrees C. for determining the solids content of potatoes. It is an indicator of the amount of water which must be evaporated in processing or frying.

TABLE STOCK Potatoes destined for use as a fresh product.

TUBER A potato.

TUBER SET Formation of tubers on the roots of the potato plant.

VEGETABLE OIL Pure vegetable oil may be used in parfrying French fries because it contains no cholesterol.

WAXY A waxy potato contains less solids than a mealy potato and will not break apart when boiled as do high starch potatoes. A waxy potato is good in recipes (salads, etc.) which call for the product to hold its shape.

YIELD Quantity of a crop harvested from a specific area, i.e., an acre.

Yield also refers to the number of servings from a given weight of a product.

APPENDICES

School District Information: (Press Hard - Making 3 copies — Please type or print legibly)

School District _____ Ordered by _____
 Address _____ Telephone () _____
 City _____ Today's Date _____
 State _____ Zip _____

Please Project Your Needs in Approximate Case Amounts for All Simplot Potato Products

PRODUCT	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APRIL	MAY	JUNE	TOTAL CASES
Quick n' Crispy Fries (Bake-A-Fry)											
Shoestrings											
Crinkle Cuts											
Thin Cuts											
Wedges											
Total											
Preformers											
Sticks											
101's											
Tri-Taters											
Gems											
Total											
Recipe Quick											
3/8" Cube											
1/2" Cube											
1/2" x 1" x 1"											
Total											

Project your potato needs prior to **September 30, 1986** and receive from Simplot the following allowances on all product sold and delivered to your location September 1, 1986 through June 30, 1987.

Sticks \$0.01 off per pound	Quick n' Crispy (Bake-A-Fry) \$0.04 off per pound
101's \$0.02 off per pound	Gems \$0.05 off per pound
Tri-Taters \$0.03 off per pound	Recipe Quick \$0.06 off per pound

PAYMENT

When a shipment of product is received, please forward proof of delivery to the following address:

J. R. SIMPLOT COMPANY
 P.O. Box 1059
 Caldwell, Idaho 83606-1059
 Attn. Claudia Brush

A check will be made payable to "school lunch program" for your school and sent directly back to the address you have noted on this form. Please allow three weeks from date proof of delivery is received.

Signature (School Representative) _____

Preferred distributor(s) — please list: _____

Signing this form is not a contractual agreement to order product, but it is a commitment to the approximate quantities and deliveries noted.

We appreciate your business!

LABORATORIES EQUIPPED FOR TESTING SOLIDS (MOISTURE) IN FRENCH FRIES

ALABAMA

MID-SOUTH TESTING

P.O. Box 1303
Decatur AL 35603
205-539-5408

ANALYTICAL LABS & SERVICES INC.

924 Meridian Street
Huntsville AL 35801
205-539-5408

DEEP SOUTH LABORATORIES

P.O. Box 4133
Montgomery AL 36104
205-288-8785

ARIZONA

BOLIN LABORATORIES, INC.

17631 N. 25th Ave.
Phoenix AZ 85023
602-942-8220

ARKANSAS

AMERICAN INTERPLEX CORP.

3400 Asher Ave.
Little Rock AR 72204
503-664-5060

ARKANSAS DEPT. OF HEALTH

4815 West Markham
Little Rock AR 72201
501-661-2000

WOODSON-TENET LABORATORY

1805 E. 5th St.
North Little Rock AR 72119
501-945-7188

CALIFORNIA

GOLDEN STATE FOODS CORP.

P.O. Box 1448
City of Industry CA 91749
213-686-0347

FOSTER POULTRY FARMS

14519 Collier Rd.
Delhi CA 95315
209-667-2281

CLOUGHERTY PACKING COMPANY

3049 East Vernon Ave.
Los Angeles CA 90058
213-583-4621

GEO. W. GOOCH LABORATORIES INC.

1250 South Boyle Ave.
Los Angeles CA 90058
213-269-7421

HOFFMAN BROTHERS PACKING CO.

2731 S. Soto St.
Los Angeles CA 90060
213-264-1181

MICHELSON LABORATORIES INC.

4555 Produce Plaza
Los Angeles CA 90058
213-583-8616

MORNING STAR LABORATORIES

4480 Pacific Blvd.
Los Angeles CA 90058
213-582-0981

EAST BAY PACKING CO.

208 Jackson St.
Oakland CA 94607
415-465-7700

ASSOCIATED LABORATORIES

806 N. Batavia
Orange CA 92668
714-771-6900

BABCAL

1155 Beecher St.
San Leandro CA 94577
415-569-9100

ARMOUR & COMPANY

290 Utah Ave.
South San Francisco CA 94080
415-761-0100

CURTIS & TOMPKINS LTD.

290 Division St.
San Francisco CA 94103
415-861-1863

GALLO SALAMIE INC.

250 Branmon St.
San Francisco CA 94107
415-495-6000

PROFESSIONAL FOOD FLAVORS, INC.

1809 23rd St.
Sacramento CA 95816
916-454-5043

COLORADO

BAR-S FOODS COMPANY

P.O. BOX 5448
DENVER CO 80217
303-292-2277

THE INDUSTRIAL LABORATORIES

1450 East 62nd Ave.
Denver CO 80216
303-287-9691

MONTFORT OF COLORADO

1650 AA St.
Greeley CO 80631
303-353-2311

CONNECTICUT

NORTHEAST LABORATORIES INC.

129 Mill St.
Berlin CT 06037
203-828-9787

MOSEY'S INC.

4 Mosey Dr.
Bloomfield CT 06002
203-243-1725

DISTRICT OF COLUMBIA

**NATIONAL FOOD PROCESSORS
ASSOC.**

1401 New York Ave., N.W., Suite 400
Washington D.C. 20005
202-639-5900

FLORIDA

ABC RESEARCH CORPORATION

3437 S.W. 24th Ave.
Gainesville FL 32607
904-372-0436

TECHNICAL SERVICES INC.

2471 Swan St.
Jacksonville FL 32204
904-353-5761

LYKES BROS., INC.

P.O. Box 518
Plant City FL 34289-0518
813-752-1102

GEORGIA

ABBY'S INC. TEN PIEDMONT CENTER

3495 Piedmont Rd., N.E., Suite 700
Atlanta GA 30305
404-262-2729

SOUTHERN FOODS INC.
1616 MURRAY ST.
COLUMBUS GA 31906
404-323-7393

GOLDEN STATE FOODS CORP.
1525 Old Covington Rd.
Conyers GA 30208
404-783-0711

SUNNYLAND FOODS INC.
Cassidy Road
Thomasville GA 81792
912-226-1611

HAWAII

FOOD QUALITY LABS
2146 Puuhale Place
Honolulu HI 96819
808-841-4484

UNIV. OF HAWAII AT MANOA
DEPT. OF AGR. BIOCHEM.
1800 East-West Rd., Henke Hall
Honolulu HI 96822
808-948-8352

ILLINOIS

SILLIKER LABORATORIES INC.
756 Foster Ave.
Bensenville IL 60106
312-595-6915

MEAT INDUSTRY LABORATORIES
INC.
828 W. Exchange Ave.
Chicago IL 60609
312-523-7017

ROSE PACKING COMPANY
4900 South Major Ave.
Chicago IL 60638
312-458-9300

MICROCHEM LABSS
701 Joey Dr.
Elk Grove IL 60007
312-437-6160

JOHN MORRELL & COMPANY
200 West Wrightwood
Elmhurst IL 60126
312-441-4800

LAND O'FROST
16850 Chicago Ave.
Lansing IL 60438
312-474-7100

WILSON FOODS CORP.
P.O. BOX B
Monmouth IL 61462
309-734-5171

SCI-TECH LABORATORIES INC.
3413 Commercial Ave.
Northbrook IL 60062
312-272-3414

INDIANA

E.S.I. MEATS, INC.
P.O. Box 605
Bristol IN 46507
219-848-7661

EMGE PACKING COMPANY
Red Bank Road
Ft. Branch IN 74648
812-753-3214

PETER ECKRICH & SONS INC.
1025 Osage St.
Fort Wayne IN 46802
219-481-2034

MOSELEY LABORATORIES, INC.
3862 E. Washington St.
Indianapolis IN 46201
317-359-9528

WILSON & COMPANY
P.O. Box 605
Logansport IN 46947
219-753-6121

IOWA

ARMOUR QUALITY CONTROL LAB
P.O. Box 327
Britt IA 50423
515-843-3832

CEDAR RAPIDS MEAT
16th Ave. & 3rd St., S.E.
Cedar Rapids IA 52401
319-398-5905

SAN LABS, INC.
One Twixt Rd., N.E.
Cedar Rapids IA 52402
319-377-8730

WILSON FOODS CORP.
1300 S. Lake St.
Cherokee IA 51012
712-225-5161

OSCAR MAYER & CO. INC.
1337 W. Second St.
Davenport IA 52804
319-322-2611

FARMLAND FOODS
Box 403
Denison IA 51442
712-263-5002

WOODSON-TENET LABS INC.
3507 Delaware Ave.
Des Moines IA 50305
515-265-1461

FDL FOODS
701-799 E. 16th St.
Dubuque IA 52001
319-588-6200

ARMOUR DIAL INC.
P.O. Box 1427
Fort Madison IA 52627
319-463-7111

HARKERS, INC.
901 6th St., S.W.
Lemars IA 51031
712-546-8171

ARMOUR FOODS
1401 South Eisenhower
Mason City IA 50401
515-424-9633

HARKERS WHOLESALE MEATS INC.
Airport Road
Orange City IA 51041
712-737-4829

RATH PACKING COMPANY
Elm & Sycamore Sts.
Waterloo IA 50704
319-235-8900

IOWA HAM PROCESSORS, INC.
702 10th Ave.
Vinton IA 52349
319-472-4772

KANSAS

ARKANSAS CITY PACKING
1800 S. Sumit
Arkansas City KS 67005
316-442-1230

IOWA BEEF PROCESSORS INC.
P.O. Box 149
Holcomb KS 67851
316-277-2614

SWIFT & COMPANY
4612 Speaker Rd.
Kansas City KS 66110
913-281-3200

DOSKOCIL SAUSAGE CO.
321 N. Main
South Hutchinson KS 67505

DOLD FOODS INC.
2929 N. Ohio
Wichita KS 67219
316-838-9101

KENTUCKY

FIELD PACKING COMPANY
P.O. Box 766
Owensboro KY 43201
502-926-3224

ARMOUR & COMPANY
P.O. Box 1108
Louisville KY 40201
502-582-0011

FISCHER PACKING CO.
P.O. Box 1138
Louisville KY 40201
502-893-3611

LOUISIANA

CENTRAL ANALYTICAL
LABORATORIES INC.
2600 Marietta Ave.
Kenner LA 70062
504-469-3511

L.A. FREY & SONS
3925 Burgundy St.
New Orleans LA 70117
504-944-7961

PSI-SHILSTONE ENGINEERING TESTING
LAB
814 Conti St.
New Orleans LA 70112
504-524-8395

MAINE

NORTHEAST LABORATORY SERVICES
137 China Road, P.O. Box 788
Waterville ME 04901
207-873-7711

MARYLAND

ESSKAY
3800 E. Baltimore St.
Baltimore MD 21224
301-957-1800

MARTEL LABORATORIES INC.
1025 Cromwellbridge Rd.
Baltimore MD 21204
301-825-7790

STRASBURGER & SIEGEL INC.
1403 Eutaw Place
Baltimore MD 21217
301-523-5518

CAMPBELL SOUP COMPANY
P.O.Box 89, Clarke Ave. Extended
Pocomoke City MD 21851
301-957-1800

MASSACHUSETTS

ANALYTICAL TESTING LABORATORY
CO.
30 Shawsheen Ave.
Bedford MA 01730
617-275-1599

COLONIAL PROVISION CO., INC.
1100 Massachusetts Ave.
Boston MA 02125
617-442-6886

COLUMBIA PACKING COMPANY
155 South Hampton
Boston MA 02118
617-442-8300

FOODS RESEARCH
130 New Market Square
Boston MA 02118
617-442-3322

WERBY LABORATORIES INC.
155 Sixth St.
chelsea MA 02150
617-884-4109

E. DEMAKES & COMPANY, INC.
37 Waterhill St.
Lynn MA 01905
617-595-1557

HERBERT V. SHUSTER INC.

5 Hayward St.
Quincy MA 02171
617-328-7600

STOP & SHOP

104 Meadow Road
Readville MA 02137
617-770-8000

CARANDO INC.

20 Carando Drive
Springfield MA 01101
413-781-5620

DGM CONSULTANTS

399 Washington St.
Weymouth MA 02188
617-337-9000

JOSEPH DE COSTA INC.

299 Washington St.
Woburn MA 01888
617-935-6200

MICHIGAN

**ANALYTIC & BIOLOGICAL LABS
INC.**

29079 Ford Rd.
Garden City MI 48135
313-422-7474

KENT PROVISION CO.

703 Leonard N.W.
Grand Rapids MI 49504
616-549-4595

COOK FAMILY FOODS LTD.

8800 Connant
Hantramck MI 48211

HENRY HOUSE INC.

284 Roost Rd.
Holland MI 49426
616-392-4011

BIL-MAR FOODS INC.

8300 96th Ave.
Zeeland MI 49464
616-875-8131

MINNESOTA

FARMSTEAD FOODS

East Main St.
Albert Lea MN 56073
507-377-4200

George A Hormel

1816 Fourth St. N.E.
Austin MN 55912
507-437-5811

ARMOUR FOOD CO.

905 E. 4th St.
Fairmont MN 56031
507-238-4221

INGMAN LABORATORIES INC.

2945 34th Ave., South
Minneapolis MN 55406
612-724-0121

MINNESOTA VALLEY TESTING LAB

326 Center St.
New Ulm MN 56073
507-354-8517

MISSISSIPPI

BRYAN FOODS

PO Box 1177
West Point MS 39733
601-464-3741

STANDARD LABORATORIES

303 Hogan St.
Starkville MS 39759
601-323-1611

MISSOURI

ANALYTICAL BIO-CHEMISTRY LABS

7200 ABC Lane
Columbia MO 65201
34 14-474-8579

CHEM-STAAT LABORATORY

2008 Sergeant, Suite 200
Joplin MO 64801
417-781-2666

ARMOUR & COMPANY
P.O. Box 8
Kansas City MO 64114
819-942-8000

INDUSTRIAL TESTING LABORATORIES
2350 Seventh Blvd.
St. Louis MO 63104
314-771-7111

RALSTON PURINA CO-PEST-CONTAM
LAB
900 Checkerboard Square
St Louis MO 63188
314-982-2382

MONTANA

PIERCE PACKING CO.
Box 30177
Billings MT 59107
406-248-7411

NEBRASKA

IOWA BEEF PROCESSORS, INC.
P.O. Box 515
Dakota City NE 68713
402-494-2061

A & L MID WEST AGRIC LAB, INC.
13611 B St.
Omaha NE 68144-3693
402-334-7770

PSI-OMAHA TESTING DIVISION
2917 Douglas St.
Omaha NE 68131
402-341-5181

SWANSON DIVISION OF CAMPBELL
SOUP CO.
1202 Douglas St.
Omaha NE 68131
402-342-8118

SWIFT & CO.
94th & 4th Streets
Omaha NE 68127
402-339-2500

NEW JERSEY

ABC RESEARCH CORP. - EAST
577 Shiloh Pike Highway 49
Bridgeton NJ 08302
609-451-1849

CAMPBELL SOUP COMPANY
Campbell Place
Camden NJ 08101
609-964-3794

SGS CONTROL SERVICES INC.
20 Lafayette St.
Carteret NJ 07008
201-541-7200

INTECH BIOLABS
158 Tices La.
East Brunswick NJ 08816
201-257-1620

NEW JERSEY LABORATORIES
222-226 Easton Ave.
New Brunswick NJ 08903
201-249-0148

BURROUGH LABORATORY
9105 Burrough-Dover Lane
Pennsanken NJ 08110
609-663-3240

NEW YORK

NEW YORK LABORATORIES
901 E. New York Ave
Brooklyn NY 11203
315-778-5262

LINWOOD FOOD LABORATORIES INC.
258 E. 88th St.
Brooklyn NY 11236
212-451-1635

FREEZER QUEEN FOODS DIV., UNITED
FOODS
975 Fuhrmann Blvd.
Buffalo NY 14203
716-824-8119

VOELKER ANALYSIS INC.

766 Babcock St.
Buffalo NY 14206
716-856-8660

CERTIFIED LABORATORIES, INC.

43-10 National St.
Corona NY 11368
212-426-1100

**EQUITY GROUP CORP. NEW YORK
DIV.**

18 New Courtland St.
Cohoes NY 12047
518-267-3700

NAGEL INC.

11-02 Queens Plaza South
Long Island City NY 11101
212-361-1300

**HEBREW NATIONAL KOSHER FOODS
INC.**

58-80 Maurice Ave.
Maspeth NY 11378
212-894-4300

NORTH CAROLINA

ARMOUR & COMPANY

2000 Thrift Rd.
Charlotte NC 28208
704-375-9311

EQUITY MEAT CORP.

Byers Dr., Rt. 87
Reidsville NC 27320
919-342-6601

**HOLLY FARMS POULTRY INDUSTRIES
INC.**

1203 School St.
Wilkesboro NC 28697
919-838-2171

GRAINGER LABORATORIES INC.

1040 Greenfield St.
Wilmington NC 28402
919-763-9793

**SOUTHERN TESTING & RESEARCH
LABS**

P.O. Box 1849
Wilson NC 27893
919-237-4175

OHIO

SUGARDALE FOODS INC.

P.O. Box 8440
Canton OH 44711
216-455-5253

COPAZ PACKING CORP.

801 East Kemper Rd.
Cincinnati OH 45246
513-782-3800

F.C. BROEMAN & CO.

830 Melborne
Cincinnati OH 45229
513-621-5441

MICROBIOLOGICAL CONTROL LABS

7875 Reading Rd.
Cincinnati OH 45237
513-276-6271

MID-WEST LABORATORIES

1299 Virginia Ave.
Columbus OH 43212
614-299-9319

R & D LABORATORY

2331 Sullivant Ave.
Columbus OH 43204
614-274-6467

BELMONT PARK LABORATORIES

1415 Salem Ave.
Dayton OH 45406
513-276-4181

SUPERIOR MEATS INC.

P.O. Box 571
Massillon OH 44646
216-832-7491

EQUITY MEAT CORP.

Interstate 75 & Grant Rd.
North Baltimore OH 45872
419-257-2341

OKLAHOMA

BAR-S FOODS CO.

P.O. Box 339
Clinton OK 73601
405-323-2468

PORTER TESTING LABORATORY

P.O. Box 25303
Oklahoma City OK 73125
405-235-7985

OREGON

COLUMBIA LABORATORIES, INC.

P.O. Box 45
Corgett OR 97019
503-695-2287

ARMOUR & COMPANY

P.O. Box 17308
Portland OR 97217
503-289-1151

FOOD QUALITY ANALYSTS INC.

11150 S.W. Allen Blvd.
Portland OR 97215
503-232-2636

OREGON DEPT. OF AGRICULTURE

635 Capitol St., N.E.
Salem OR 97310
503-378-3793

PENNSYLVANIA

MEDFORD MEATS

18 West Second St.
Chester PA 19016
215-874-5356

EQUITY GROUP

600 Kaiser Dr.
Folcroft PA 19032
215-534-5900

HORACE W. LONGACRE, INC.

Rt. 113 & Allentown Rd.
Franconia PA 18924
215-723-4335

HATFIELD PACKING CO.

2700 Funks Rd.
Hatfield PA 19440
215-368-2500

BREXAN LABORATORIES

P.O. Box 112
Huntingdon Valley PA 19006
215-947-4121

SCHILLER LABORATORY

Box 368, Harmony Rd.
Ingomar PA 15127
412-364-4820

KUNZLER AND CO. INC.

640-662 Manor St.
Lancaster PA 17604
717-299-6301

LANCASTER LABORATORIES INC.

2425 New Holland Pike
Lancaster PA 17601
717-656-2301

AMERICAN HOME FOODS

Marr St.
Milton PA 17847
717-742-7621

DALARE ASSOCIATES

217 South 24th St.
Philadelphia PA 19103
215-567-1953

DIETZ & WATSON

5701 Tacony St.
Philadelphia PA 19135
215-831-9000

FREDA CORPORATION

1334 S. Front St.
Philadelphia PA 18147
215-336-6300

HYGRADE FOOD PRODUCTS CORP.

8400 Executive Ave.
Philadelphia PA 19153
215-365-8700

OSCAR MAYER
3333 S. Front St.
Philadelphia PA 19101
215-463-3300

BERKS PACKING CO.
307 Bingaman St., Box 1582
Reading PA 19603
215-376-7291

QUALITY CONTROL LABORATORY,
INC.
1205 Industrial Highway
Southampton PA 18955
215-355-3900

RHODE ISLAND

NEW ENGLAND TESTING
LABORATORY, INC.
1254 Douglas Ave.
North Providence RI 02904
401-353-3420

SOUTH CAROLINA

HAHN LABORATORIES
1111 Flora St.
Columbia SC 29201
803-799-1614

GREENWOOD PACKING PLANT
1 Packer Rd.
Greenwood SC 29648
803-229-2628

SOUTH DAKOTA

SOUTH DAKOTA STATE UNIVERSITY
Station Biochemistry
Brookings SD 57007
605-688-6171

ANALYTICAL LABORATORIES, INC.
208 S. Wayland Ave.
Sioux Falls SD 57103-1791
605-338-0555

JOHN MORRELL
P.O. Box 951
Sioux Falls SD 57104
605-338-8200

TENNESSEE

LAY PACKING COMPANY
400 East Jackson Ave.
Knoxville TN 37915
615-546-2511

BARROW AGEE LABORATORIES, INC.
405 Saturn Dr.
Memphis TN 38101
901-332-1590

MEMPHIS PACKING CO.
1400 North Warford St.
Memphis TN 38108
901-323-1151

NAT BURNING
1837 Harbor Ave.
Memphis TN 38106
901-942-3221

SGS CONTROL
1025 Harbor Ave.
Memphis TN 38113
901-775-1660

WOODSON TENENT LABORATORIES
345 Adams
Memphis TN 38102
901-525-6333

WARNER LABORATORIES, INC.
P.O. Box 110164
Nashville TN 37211
615-242-1480

REELFOOT PACKING CO.
Reelfoot Ave.
Union City TN 38621

TEXAS

GOOCH PACKING COMPANY
P.O. Box 2738
Abilene TX 79604
915-673-8223

IOWA BEEF PROCESSORS

P.O. Box 30500
Amarillo TX 79187
806-335-1530

PSI-BIOSEARCH LABORATORIES INC.

1178 Corporate Drive, West
Arlington TX 76011
817-640-4162

KRECK FOODS

4115 South Lamar
Dallas TX 75215
214-428-3551

SWIFT & COMPANY

Swift Zone Lab., P.O. Box 265
Ft. Worth TX 76101
817-625-1541

JACOB E. DECKER & SONS

3200 Kingsley Rd - Garland
Garland TX 75041
214-428-3551

PSI SHILSTONE LABS.

1714 Memorial Dr.
Houston TX 77077
713-324-2047

L & H PACKING LABORATORY

1545 S. San Marcos
San Antonio TX 78201
512-227-4370

PSI-SHILSTONE ENG. TEST. LAB. DIV.

Three Burnwood La.
San Antonio TX 78216
512-349-5242

TEXAS TESTING LABORATORIES

1610 S. Laredo St.
San Antonio TX 78207
512-224-4823

OSCAR MAYER & CO.

P.O. Box 100
Sherman TX 75090
214-893-5151

UTAH**FORD CHEMICAL LABORATORY, INC.**

40 West Louise Ave.
Salt Lake City UT 84115
801-485-8761

UTAH DEPT. OF AGRICULTURE

350 N. Redwood Rd.
Salt Lake City UT 84116
801-533-4276

OTTO & SONS

4980 W. 9470 South
West Jordan UT 84084
801-566-1651

VIRGINIA**SHENANDOAH FOOD PROCESSORS
CORP.**

100 Quality St.
Bridgewater VA 22812
703-828-2581

VALLEYDALE PACKERS INC.

Box. 1479, 1119 Commonwealth Ave.
Ex.
Bristol VA 24201
703-699-3112

GWALTNEY PACKING CO.

P.O. Box 489, Hwy. 10
Smithfield VA 23420
804-357-3131

THE SMITHFIELD PACKING CO. INC.

P.O. Box 447, Rt. 10
Smithfield VA 23430
804-357-4321

JENNINGS LABORATORIES

P.O. Box 851, 1118 Cypress Ave.
Virginia Beach VA 23451
804-421-1498

WASHINGTON

IOWA BEEF PROCESSORS INC.

Dodd Rd.
Pasco WA 99301
509-547-7545

AM TEST INC.

4900 9th Ave., N.W.
Seattle WA 98107
206-783-4700

BENNETT CHEMICAL LABORATORIES INC.

901 S. 9th St.
Tacoma WA 98405
206-272-4507

HYGRADE FOOD PRODUCTS

1623 East J. St.
Tacoma WA 94821
206-627-8121

WISCONSIN

BADGER LABORATORIES & ENGINEERING

1110 S. Oneida
Appleton WI 54915
414-739-9213

COMMERCIAL TESTING LABORATORIES

P.O. Box 526
Colfax WI 54730
715-962-3121

CUDAHY INC.

3500 E. Barnard Ave.
Cudahy WI 53110
414-744-2000

JONES DAIRY FARM

P.O. Box 269
Fort Atkinson WI 53538
414-563-2431

STOPPENBACK SAUSAGE CO.

P.O. Box 269
Jefferson WI 53549
414-674-2550

HAZLETON-RALTECH, INC.

3301 Kinsman Blvd.
Madison WI 53704
608-241-4471

OSCAR MAYER & CO. INC.

910 Mayer Ave.
Madison WI 53701
608-241-3311

KLEMENT SAUSAGE CO. INC.

207 E. Lincoln Ave.
Milwaukee WI 53297
414-744-2330

PECK MEAT PACKING CORP.

231 S. Muskego Ave.
Milwaukee WI 53233
414-645-6500

SOMMER FREY LABORATORIES

6125 W. National Ave.
Milwaukee WI 53214
414-475-6700

The following laboratories are operated by the National Food Processors Association. These laboratories perform, for a fee, microbiological, nutritional, chemical and toxic testing of food products.

EASTERN LABORATORY

National Food Processors Assn.
1401 New York Ave., N.W., Suite 400
Washington D.C. 20005
202-639-5975

NORTHWEST LABORATORY

National Food Processors Assn.
1600 S. Jackson St.
Seattle WA 98144
206-323-6540

WESTERN LABORATORY

National Food Processors Assn.
1950 6th St.
Berkeley CA 95710
415-843-9762

THE FOLLOWING SPECIFICATIONS ARE USED BY THE USDA WHEN PURCHASING FRENCH FRIES FOR SCHOOL FOOD SERVICE PROGRAMS

The requirements for frozen potato products must be certified under continual on-line grading by USDA Graders.

A. FROZEN FRENCH FRIED STRIPS

Frozen French Fried Strips delivered shall be of the oven and fry types and meet the following additional requirements:

1. Grade: U.S. Grade A
2. Fry Color: USDA colors: Oven Type, 0 and 1; Fry Type, 00 and 0. No artificial colors may be used.
3. Type: Institutional
4. Style: Strips Crinkle Cut
5. Length: Medium or Longer
6. Oven Heating: (Oven type only) The product shall be so processed as to retain sufficient oil to allow proper preparation by oven heating.
7. Solids Requirements: Product shall contain a solids percentage of 28 percent by weight. A minimum of 5 readings per 70,000 pounds of product shall be made. (The solids shall be determined by the Official Convection Oven Method, as described in the "Official Methods of Analysis of the Association of Official Analytical Chemists, 14th Edition, 1984.
8. Net Weight: Cases shall be packed with 6 primary containers. The average net weight of the cases of crinkle cut shall be not less than 30 pounds and no individual secondary container shall weigh less than 29.4 pounds.

ALLOWANCE

Not more than 10 percent by count of units present of Frozen French Fried Strips, except chips, may consist of small pieces, slivers, and/or irregular pieces.

B. PREFORMED ROUNDS

Commercial Item Description (CID A-A-20038-preformed rounds)

- | | | |
|-------------------|-----|--|
| Styles: | (a) | Round |
| Type of Pack: | (b) | Institutional |
| Prefry Color: | | Medium Light, Medium |
| Flavor: | (b) | Unflavored |
| Reheating method: | (a) | Oven |
| Fortification: | (b) | Unfortified |
| Size and Count: | | |
| | (a) | Cross-sectional dimension: 3/4 to 1" in diameter |
| | (b) | Length: 1 to 1-1/4" |
| | (c) | Count: 47-54 units per pound |

1. No artificial color may be added.
2. Preservatives or flavor enhancers such as monosodium glutamate are not permitted.
3. The product shall be so processed as to allow proper preparation by oven heating.
4. Net Weight: Cases shall be packed with 6 primary containers each. The average net weight of the cases shall be no less than 30 pounds. No individual secondary container shall weigh less than 29.4 pounds.

ALLOWANCE

Not more than 10 percent, by count, of the units present, excluding chips, may consist of irregular shaped units, small pieces, and small clusters.

Clusters and chips shall be evaluated on an overall appearance basis and may no more than slightly detract from the appearance of the product.

ADDITIONAL QUALITY FACTORS (for Preformed Rounds)

1. Defects - The product shall be U.S. Grade A in accordance with the U.S. Standards for Grades of Frozen French Fried Potatoes, except that, in addition, any mechanically damaged unit with its interior portion exposed is scored as a major defect. The allowance for defectives is contained in the U.S. Standards for Grades of Frozen French Fried Potatoes, Table I, Institutional Type.
2. Texture - The product shall be U.S. Grade A in accordance with the U.S. Standards for Grades of Frozen French Fried Potatoes except that the Product may contain slightly more moisture. After preparation, the product shall have an internal appearance of having individual bits and pieces of properly blanched potato.
3. Flavor - The product shall be U.S. Grade A in accordance with the U.S. Standards for Grades of Frozen French Fried Potatoes.

THE FOLLOWING IS A PARTIAL LIST OF RECENT SUPPLIERS OF USDA FRENCH FRIES

1. Carnation Company, Processed Potato Division, PO Box 9069, Nampa ID 83652
2. Gourmet Brands, Inc., (U&I Group), PO Box 11699, Salt Lake City UT 84147
3. Interstate Potato Co., (Oppenheimer Industries), 1 Capitol Center, 999 Main St., Drawer O, Boise ID 83702
4. Lamb-Weston, 6600 S. W. Hampton St., PO Box 23517, Portland OR 97223
5. McCain Foods, Inc., 5 Wade Road Washburn (Aroostook) ME 04605
6. Mid-America Potato Co., PO Box 2604, Grand Rapids MI 49501
7. Ore-Ida Foods, Inc., PO Box 10, Boise ID 83707
8. Rogers, Walla Walla, TaterBoy Quality Products Co. PO Box 998, Walla Walla WA 99362
9. J. R. Simplot Co. PO Box 1059, Caldwell, ID 83606-1059
10. Twin City Foods, North Pacific Cannery & Packers, Inc., PO Box 1800, Lake Oswego OR 97034

MAJOR BUYING GROUPS OFFERING FOOD PRODUCTS TO DISTRIBUTORS

ALL KITCHENS

209 Main Street
Boise ID 83702
Phone 208-336-7003
Contacts: Pat Haas,
V.P., Operations
Pam Bly, V.P., Mktg.
Labels:
All Kitchens - Green
All Kitchens - Blue
Kitchen Value - Red

BONDED FOODS CO.

1 Capital Center
Boise ID
Phone: 208-342-7771
Contacts: Ernie Voigt
Labels:
Golbon (only one label)

CFS CONTINENTAL

100 Wacker Drive
Chicago IL 60606
Phone: 312-368-7500
Contacts: Chuck Fisher
Q.C. 312-477-7600
Roger Davidson 213-887-3140
San Francisco
Labels:
CFS Continental - Gold
CFS Continental - Red
CFS Continental - Blue

CODE

400 Holiday Drive, Suite #250
Pittsburgh PA 15220
Phone: 412-921-1101
Contacts: Scott Ganzer
Purchasing
Archie Brocklehurst, Q. C.
Labels:
Code - Red
Code - Blue
Code - Green

F.A.B., INC.

6400 Atlantic Blvd. Suite 140
Norcross GA 30017
Phone: 404-449-1333
Contacts: John Schultz
Director, Quality Assurance
Louis Dell, President
Labels:
Frosty Acres
Garden Delight

FEDERATED FOODS, INC.

3025 Salt Creek Lane
Arlington Hts. IL
Phone: 312-577-1200
Contacts: Rich Copenhagen
Labels: - 2 sets of labels
Red & White - Red Parade - Red
Red & White - Blue Parade - Blue
Red & White - Yellow Parade - Green

KRAFT, INC.

Kraft Court
Glenview IL 60025
Phone: 312-998-3304
Contacts:
John Forman
Ellen Thomas - Compliance
Labels:
Kraft - 5 Star - Blue
Kraft - 4 Star - Red
Kraft - 3 Star - Green

LIL BRAVE DISTRIBUTORS, INC.,

9504 E. 63rd PO Box 16570
Kansas City MO 64113
Phone: 816-356-6900
Contacts:
Tom Brier, President
Pat Brier
Labels:
Lil Brave - Blue
Lil Brave - Red
Lil Brave - Green

1 Labels listed in order of quality, i.e., first label is fancy, second quality is choice or extra standard and third label is standard. Choice is the top quality of canned fruits available in any appreciable quantity. Apples, berries, cherries, prunes and tropical fruits are exceptions. Most buying groups label choice under their top label. Code labels choice fruits under their second or blue label.

NIFDA

PO Box 19936
Atlanta GA 30325
Phone: 404-952-0871
Contacts:
Tom Morin, Vice President
Quality Assurance
Labels:
NIFDA - Blue
Prime Pak, Royal Pak & Dandy Pak²
Chef Pac - Red
Econo Pac - Green

NORTH AMERICAN FOODSERVICE

250 South Wacker Drive
Chicago IL 60606
Phone: 312-263-0581 /209-957-7306
Contacts:
Don Werfelman Dir. Q.C.
Ray Nelson - VP West Coast Operations
Labels:³
North American - Blue
Host Delight - Red
Host Pak - Green

NUGGET BRAND DISTRIBUTORS

4226 Coronado Ave. PO Box 8309
Stockton CA 95208
Phone: 209-948-8122
Contacts:
Walter Clark
Director Quality Assurance/Purchasing
Labels:
Nugget - Black
Nugget - Red
Nugget - Green

PACIFIC GAMBLE ROBINSON CO.

PO Box 2489
Kirkland WA 98033
Phone: 206-828-6200
Contacts:
E. A. Thompson, Ex. V.P.
Labels:
First Frozen - Snowboy
First Canned - Stanby
Second Canned - Garden

PLEE-ZING

1640 Pleasant Rd
Glenview IL 60025
Phone: 312-998-0200
Contacts:
Herbert Menches, Ex. V.P.
Labels:
Plee-zing
Little Mommie
Partake

POCAHONTAS FOODS USA

7420 Ranco Road PO Box 9729
Richmond VA 23228
Phone: 804-262-8614
Contact:
Wayne Gaulding
Labels:
Pocahontas
Mount Sterling
Wigwam

-
- 2 Nifda has three Grade A labels, Prime Pak for those fruits and vegetables from areas which are acknowledged as prime growing areas. Nifda claims these products exceed USDA Grade A by 5 points. In Royal Pak, the growing areas are not as closely discriminated but the product will still grade out 3 to 5 points higher than minimum USDA Grade A specifications. Dandy Pak meets the Grade A USDA minimum specifications.
- 3 Distributors of North American may develop their own labels, but use North American packers and grade standards. They may also use different colors than NA.

PYA/MONARCH, INC.

2818 Whitehorse Road

Greenville SC 29611

Phone: 803-233-9933

Contacts:

James T. Pierce, Chairman & CEO

John Gates Ex. V.P.

Labels:

Monarch - Blue

Monarch - Red

Monarch - Green

SYSCO FOOD SERVICES, INC.

535 Portwell Street PO Box 15316

Houston TX 77020

Phone: 713-672-8080

Contacts:

Jack Stone

Don C. Thomas, Dir. Admin. Operations

Jackson MS 39207 Phone: 601-354-1701

Labels:

Sysco - Blue⁵

Buy Line - White w/Blue Border

S. E. RYKOFF

761 Terminal Street

PO Box 21917

Los Angeles CA 90021-0917

Phone: 213-622-4131

Contacts:

Thomas R. Rykoff, V.P. Purchasing

Chris Adams, Ex. V.P.

Labels:

SER⁴

Golden Rey

Sexton - Red

Silver Rey

Sexton - Blue

Glowing Star

Sexton - Green

4 Rykoff has several labels; SER is the highest quality, i.e., the gourmet items, Golden Rey is comparable to other buying groups' first quality, Silver Rey second quality and Glowing Star the third quality. Sexton labels are similar to other buying groups. i.e., Red is top quality, blue is second and green is third or standard.

5 Sysco Update: New corporate program is being phased in as follows: Supreme Gold = rare and unique products, Imperial Blue = fancy vegetables and fancy and choice fruits from prime growing regions; Classic Red = Fancy vegetables and choice fruits from non-prime growing regions; Reliance Green = Extra standard vegetables, standard fruits; Value Line Brown = Standard vegetables, irregular fruits. All Sysco import products carry a globe and the words "a global source". Some Sysco and Buy Line labels will remain the same in the distribution system until supplies are exhausted.

04/19/86

CHART OF GRADE DESIGNATIONS OFFERED BY MAJOR BUYING GROUPS

Buying Group	1st Quality	2nd Quality	3rd Quality
	 GREEN	 BLUE	 RED
	 GOLD	 RED	 BLUE
	 RED	 BLUE	 GREEN
FEDERATED	 RED  RED	 BLUE  BLUE	 YELLOW  YELLOW
 F.A.B., INC.			— — — — —
	 BLUE	 RED	 GREEN
	 BLUE Prime Pak Royal-Pak™ Dandy-Pak™	 RED	 GREEN




CHART OF GRADE DESIGNATIONS OFFERED BY MAJOR BUYING GROUPS

Continued

Buying Group	1st Quality	2nd Quality	3rd Quality
Nugget.	 BLACK	 RED	 GREEN
 PLEE-ZING	 PLEE-ZING	LITTLE MOMMIE	PARTAKE
 <i>Pocahontas</i> <small>FOODS USA DISTRIBUTOR</small>	<i>Pocahontas</i>	Mount Stirling	 Wigwam
 S. E. RYKOFF & CO.	GOLDEN REY  RED	SILVER REY  BLUE	GLOWING STAR  GREEN
 SYSCO	 SYSCO Supreme - Gold Imperial - Blue Classic - Red	 SYSCO Reliance- Green	VALUE LINE _____ BROWN
 KRAFT FOODSERVICE	5 STAR BLUE	4 STAR RED	3 STAR GREEN
 North American Foodservice	 North American BLUE	 Host Delight RED	 Host Pak GREEN

CHART OF GRADE DESIGNATIONS OFFERED BY MAJOR BUYING GROUPS

Continued

Buying Group	1st Quality	2nd Quality	3rd Quality
 PACIFIC GAMBLE ROBINSON CO.			<hr/>
LIL BRAVE	BLUE	RED	GREEN
BONDED	GOLDBON	<hr/>	<hr/>

NOTES

- (a) **1st Quality:** Packer Grade A for canned and frozen vegetables and frozen fruits. Packer Grade B (Choice) for canned fruits. Exception: Code Grade B fruits are packed under the 2nd Quality label.
- (b) **Frosty Acres French Fries:** Color represents length of potato:
Red = Premium Length (extra long); Brown = Long; Blue = Line Flow (variable lengths).
- (c) **North American Buying Group** permits members to use their own "house" brands which may have different color or brand codes. House labels are packed under buying group contracts using the same quality standards.
- (d) **Lil Brave and Bonded:** Logos not furnished.
- (e) **Sysco update:** New corporate label program is being phased in as follows: Supreme Gold = Rare and unique products; Imperial Blue = Fancy vegetables and fancy and choice fruits from prime growing regions; Classic Red = Fancy vegetables and choice fruits from non-prime growing regions. Some Sysco and Buy Line labels will remain in the distribution system until supplies are exhausted.
- (f) **NIFDA update:** Prime Pak = Fancy vegetables and choice fruits from prime growing regions; Royal Pak = Same as Prime Pak except from any region. NIFDA claims both will score 5 points higher than the minimum level for USDA Grade A. Dandy Pak = Fancy vegetables and choice fruits which meet USDA Grade Standards.

EXAMPLES OF SHORT SPECS FOR FRENCH FRIES. EXCERPT FROM THE
FNS MANUAL "CATALOG OF SPECIFICATIONS"

GROUP B FROZEN FRUITS, JUICES, VEGETABLES & BAKERY PRODUCTS (Con't.)

PRODUCT LIST

No.	IDENTIFICATION	No.	IDENTIFICATION
(4) - VEGETABLES - POTATOES			
B701A	POTATOES, F.F. EXTRA LONG 1/2 inch, Crinkle Grade A, 6/5 lb. % Solids: 32 Unit: Case	B711A	POTATOES, F.F., LONG 1/2 inch, Crinkle Grade A, 6/5 lb. % Solids: 30 Unit: Case
B702A	POTATOES, F.F., EXTRA LONG 3/8 inch, Crinkle Grade A, 6/5 lb. % Solids: 32 Unit: Case	B712A	POTATOES, F.F., LONG 3/8 inch, Crinkle Grade A, 6/5 lb. % Solids: 30 Unit: Case
B703A	POTATOES, F.F., EXTRA LONG 3/8 inch, Straight Grade A, 6/5 lb. % Solids: 32 Unit: Case	B713A	POTATOES, F.F., LONG 3/8 inch, Straight Grade A, 6/5 lb. % Solids: 30 Unit: Case
B704A	POTATOES, F.F., EXTRA LONG 5/16 inch, Crinkle Grade A, 6/5 lb. % Solids: 34 Unit: Case	B714A	POTATOES, F.F., LONG 5/16 inch, Crinkle Grade A, 6/5 lb. % Solids: 32 Unit: Case
B705A	POTATOES, F.F., EXTRA LONG 5/16 inch, Straight Grade A, 6/5 lb. Solids: 34 Unit: Case	B715A	POTATOES, F.F., LONG 5/16 inch, Straight Grade A, 6/5 lb. % Solids: 32 Unit: Case
B706A	POTATOES, F.F., EXTRA LONG 1/4 inch, Shoestring Grade A, 6/4-1/2 lb. % Solids: 36 Unit: Case	B716A	POTATOES, F.F., LONG 1/4 inch, Shoestring Grade A, 6/4-1/2 lb. % Solids: 34 Unit: Case
B707A	POTATOES, F.F., EXTRA LONG 3/8 x 7/8 inch, Steak Fries Grade A, 6/5 lb. % Solids: 30 Unit: Case	B717A	POTATOES, F.F., LONG 3/8 x 7/8 inch, Steak Fries Grade A, 6/5 lb. % Solids: 28 Unit: Case

GROUP B FROZEN FRUITS, JUICES, VEGETABLES & BAKERY PRODUCTS (Con't.)

PRODUCT LIST

No.	IDENTIFICATION	No.	IDENTIFICATION
(4) - VEGETABLES - POTATOES			
B721A	POTATOES, F.F., LINE FLOW 1/2 inch, Crinkle Grade A, 6/5 lb. % Solids: 28 Unit: Case	B731B	POTATOES, F.F., LONG 1/2 inch, Crinkle Grade B, 6/5 lb. % Solids: 26 Unit: Case
B722A	POTATOES, F.F., LINE FLOW 3/8 inch, Crinkle Grade A, 6/5 lb. % Solids: 28 Unit: Case	B732B	POTATOES, F.F., LONG 3/8 inch, Crinkle Grade B, 6/5 lb. % Solids: 26 Unit: Case
B723A	POTATOES, F.F., LINE FLOW 3/8 inch, Straight Grade A, 6/5 lb. % Solids: 28 Unit: Case	B733B	POTATOES, F.F., LONG 3/8 inch, Straight Grade B, 6/5 lb. % Solids: 26 Unit: Case
B724A	POTATOES, F.F., LINE FLOW 5/16 inch, Crinkle Grade A, 6/5 lb. % Solids: 30 Unit: Case	B734B	POTATOES, F.F., LONG 5/16 inch, Crinkle Grade B, 6/5 lb. % Solids: 28 Unit: Case
B725A	POTATOES, F.F., LINE FLOW 5/16 inch, Straight Grade A, 6/5 lb. % Solids: 30 Unit: Case	B735B	POTATOES, F.F., LONG 5/16 inch, Straight Grade B, 6/5 lb. % Solids: 28 Unit: Case
B726A	POTATOES, F.F., LINE FLOW 1/4 inch, Shoestring Grade A, 6/4-1/2 lb. % Solids: 32 Unit: Case	B736B	POTATOES, F.F., LONG 1/4 inch, Shoestring Grade B, 6/4-1/2 lb. % Solids: 30 Unit: Case
B727A	POTATOES, F.F., LINE FLOW 3/8 x 7/8 inch, Steak Fries Grade A, 6/5 lb. % Solids: 26 Unit: Case	B737B	POTATOES, F.F., LONG 3/8 x 7/8 inch, Steak Fries Grade B, 6/5 lb. % Solids: 24 Unit: Case

GROUP B FROZEN FRUITS, JUICES, VEGETABLES & BAKERY PRODUCTS (Con't.)

PRODUCT LIST

No.	IDENTIFICATION	No.	IDENTIFICATION
(4) - VEGETABLES - POTATOES			
B741B	POTATOES, F.F., LINE FLOW 1/2 inch, Crinkle Grade B, 6/5 lb. % Solids: 26 Unit: Case	B750A	POTATOES, F.F. OVEN READY, LONG 1/4 inch, Shoestring Grade A, 6/4 lb. % Solids: 55 Unit: Case
B742B	POTATOES, F.F., LINE FLOW 3/8 inch, Crinkle Grade B, 6/5 lb. % Solids: 26 Unit: Case	B751A	POTATOES, F.F., OVEN READY, LONG 3/8 inch, Crinkle Grade A, 6/4 lb. % Solids: 45 Unit: Case
B743B	POTATOES, F.F., LINE FLOW 3/8 inch, Straight Grade B, 6/5 lb. % Solids: 26 Unit: Case	B757A	POTATOES, F.F. OVEN READY, LONG 3/8 inch, Straight Grade A, 6/4 lb. % Solids: 48 Unit: Case
B744B	POTATOES, F.F., LINE FLOW 5/16 inch, Crinkle Grade B, 6/5 lb. % Solids: 28 Unit: Case	B759A	POTATOES, FF, OVEN READY LINE FLO 1/4 inch, Shoestring Grade A, 6/4 lb. % Solids: 36 Unit: Case
B745B	POTATOES, F.F., LINE FLOW 5/16 inch, Straight Grade B, 6/5 lb. % Solids: 28 Unit: Case	B761A	POTATOES, FF, OVEN READY LINE FLO 5/16 inch, Crinkle Grade A, 6/5 lb. % Solids: 34 Unit: Case
B746B	POTATOES, F.F., LINE FLOW 1/4 inch, Shoestring Grade B, 6/4-1/2 lb. % Solids: 30 Unit: Case	B763A	POTATOES, FF, OVEN READY LINE FLO 1/2 inch, Straight Grade A, 6/5 lb. % Solids: 34 Unit: Case
B747B	POTATOES, F.F., LINE FLOW 3/8 x 7/8 inch, Steak Fries Grade B, 6/5 lb. % Solids: 24 Unit: Case	B764A	POTATOES, FF, OVEN READY LINE FLO 1/2 inch, Crinkle Grade A, 6/5 lb. % Solids: 34 Unit: Case

GROUP B FROZEN FRUITS, JUICES, VEGETABLES & BAKERY PRODUCTS (Con't.)

PRODUCT LIST

No.	IDENTIFICATION	No.	IDENTIFICATION
(4) - VEGETABLES - POTATOES			
B765A	POTATOES, FF, OVEN READY LINE FLOW 1/2 inch, Straight Grade A, 6/5 lb. % Solids: 34 Unit: Case	B786	POTATOES, STICKS Shredded, Seasoned, Compressed Grade A, 6/5 lb. % Solids: N/A Unit: Case
B774A	POTATOES, FF, OVEN READY LINE FLOW 5/16 inch, Crinkle Grade A, 8/3 lb. % Solids: 36 Unit: Case	B787	POTATOES, TRIANGLES Shredded, Seasoned, Compressed 1 oz., Grade A, 6/5 lb. % Solids: N/A Unit: Case
B775A	POTATOES, OVEN-READY, EXTRA LONG Extruded, 5/16 inch, Crinkle Vitamin C Enriched Grade A, 6/4 lb. Unit: Case	B788	POTATOES, TRIANGLES Shredded, Seasoned, Compressed 1.6 oz., Grade A, 6/5 lb. % Solids: N/A Unit: Case
B781A	POTATOES, F.F., CROSS-CUT Straight Cut (Home Fries) Grade A, 6/5 lb. % Solids: N/A Unit: Case	B790	POTATOES, TRIANGLES Shredded, Seasoned, Compressed 3 oz., Grade A, 6/5 lb. % Solids: N/A Unit: Case
B782A	POTATOES, F.F., CROSS-CUT Crinkle Cut (Cottage fries) Grade None, 6/5 lb. Unit: Case	B793	POTATOES, HASH BROWNS Shredded, or Diced seasoned 96/3 oz. box, Scored portions Grade A, 18 lb. bulk Unit: Case
B783A	POTATOES, F.F., CRISS-CROSS Grade A, 6/5 lb. % Solids: N/A Unit: Case	B795	POTATO SKINS Halves, Grade A, 6/5 lb. % Solids: N/A Unit: Case
B785	POTATOES, BALLS Shredded, Seasoned, Compressed Grade A, 6/5 lb. % Solids: N/A Unit: Case	B798A	POTATOES, WHOLE BAKED Scrubbed, Grade None, 6/5 lb. Minimum wt. 2-1/2 oz. Unit: Case

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Washington Potatoes Guide to Quality, Washington State Potato Commission, Moses Lake, Washington 98837.

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Numerous pamphlets furnished by packers including J. R. Simplot, Lamb and Weston, Ore-Ida, Pocahontas Foods USA, The Idaho Potato Commission, Boise, ID and The Potato Board, Denver Colorado.

LIST OF FRENCH FRIED POTATO PACKERS REPORTING PRODUCT CODES*

Carnation Company
Processed Potatoes
5045 Wilshire Blvd.
Los Angeles CA 90036

Plants: Nampa, ID
Moses Lake, WA
Othello, WA

Chef Reddy
Foods Corporation
PO Box 607

Othello WA 99344
Plants: Othello, WA
Clark, SD
Park Rapids, MN

Gourmet Brands, Inc.
(U & I Group)
PO Box 11699
Salt Lake City UT 84147
Plant: Boardman WA

Idaho Frozen Foods Corp.
PO Box 128
Twin Falls ID 83301
Plant: Twin Falls ID

Interstate Potato Co.
1 Capitol Center
999 Main St. Drawer O
Boise ID 83702
Plant: Presque Isle ME

Lamb-Weston
6600 S. W. Hampton St
PO Box 23517
Portland OR 97223
Plants: American Falls ID
Connell WA
Quincy WA
Richland WA
Hermiston WA

McCain Foods, Inc.
5 Wade Rd.
Washburn (Aroostook) ME 04605
Plant: Easton ME

Mid-America Potato Co.
PO Box 2604
Grand Rapids MI 49501
Plant: Grand Rapids MI

Ore-Ida Foods, Inc.
PO Box 10
Boise ID 83707
Plants: Ontario OR
Burley ID
Plover WI

Rogers Walla Walla, Inc.
Tater Boy
Quality Potato Products
PO Box 998
Walla Walla WA 99326
Plant: Pasco WA

J. R. Simplot Company
PO Box 1059
Caldwell ID 83606-1059
Plants: Caldwell ID
Hayburn ID
Aberdeen ID
Grand Forks ND
Presque Isle ME

Twin City Foods
PO Box 699
Stanwood WA 98292
Plant: Pasco WA

* See Section VI.

Codes not received at this printing.

Northern Star Co.
3171 SE 5th St.
Minneapolis MN 55414
Plant: Minneapolis MN

Western Potato
Processing Co.
Box F
Nampa ID 83653
Plant: Nampa ID
Zillah WA

MAJOR BUYING GROUPS REPORTING PRODUCT CODES

F.A.B., Inc. (Frosty Acres)
6400 Atlantic Blvd., Suite 140
Norcross GA 30017

Nugget Distributors, Inc.
PO Box 8309
Stockton CA 95208

Kraft, Inc.
Kraft Court
Glenview IL 60025

PYA Monarch
2819 Whitehorse Road
Greenville SC 29611

Nifda, Inc.
PO Box 19936
Atlanta GA 30325

CONTRIBUTORS

The following individuals were very helpful in providing extensive information on French fries.

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Ore-Ida Foods, Inc. - John Lord
Pocahontas - Wayne Gaulding
Potato Board, The - Linda McCashion
Simplot Company, J.R. - Kelley Atchison
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Processed Products Branch
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Commodity Procurement Branch
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FNS, Nutritional Technical Services
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Washington State University - Dr. W. M. Iritani

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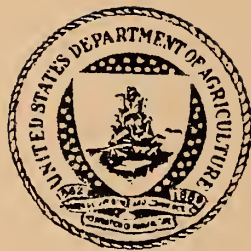
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